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october 1982

How to Use Cost-Analysis Techniques

Interinstitutional Programs—Problem or Solution?

Teaching Nursing History Again

Consultation Patterns Between Nurses and Pharmacists

An Open Letter

NLN Education Statistics—1981

official publication of the national league for nursing

nursing & health care

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"Educational Preparation for Nursing — 1981"

JOHN C. VAUGHN

As part of a continuing series of annual reports that formerly appeared in Nursing Outlook *and, earlier, in the* American Journal of Nursing, *the National League for Nursing presents the update of the nursing education statistics.*

The data presented here are derived from the League's annual survey of state-approved schools of nursing in the 56 jurisdictions of the United States. In October, questionnaires are mailed to each school of nursing as well as those nursing programs that did not require state board approval (master's and doctoral programs, and baccalaureate programs designed exclusively for RNs). Data on the status of state-approved basic schools (new schools, closed schools, and changes in existing schools) are obtained each summer from the state boards of nursing.

The data obtained include admissions and graduations for the preceding academic year, admissions for the current fall term, and

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enrollments as of October 15. More detailed information is published in two annual NLN directories, State-Approved Schools of Nursing—RN *and* State-Approved Schools of Nursing—LPN/LVN, *and also in the annual* NLN Nursing Data Book, *which contains the latest and most comprehensive statistics on nursing education available anywhere. Each year an effort is made to examine some aspect of nursing education. This year a statistical picture of men and minority students is presented.*

Basic RN programs have continued to proliferate for the third year in a row, rising from 1,403 in 1980 to 1,422 in 1981, according to Table 1. The growth of the past three years stands in marked contrast to the steady state of the previous seven years (1972-1978) when basic RN programs numbered between 1,372 and 1,377. A net increase of 48 basic RN programs was registered between 1978 and 1981. During this time period, 115 programs opened and 67 closed. Most of the new programs were publicly supported (N = 76), while most of the closed programs were privately supported (N = 41). Programs recently getting underway were more likely to offer associate (N = 64) or baccalaureate degrees (N = 49), and those ceasing operation were more likely to offer diplomas (N = 43) or, to a lesser extent, associate degrees (N = 15).

Practical and vocational nursing programs also registered a significant increase in their numbers between 1980 and 1981, producing a net gain of 12. This was the first major growth in PN programs since 1975 when their total number rose by 22. The new growth was obtained by the opening of 32 programs and the closure of 20 others.

Consistent with the proliferation of nursing programs, annual admissions rose in all basic nursing education programs during 1980-81, as seen in Table 2. Annual admissions grew about 4 percent in all basic RN programs as well as all LPN/LVN programs. This upswing dramatically reverses the declining annual admissions that were evident for three consecutive years in basic RN education programs and for two years in a row in LPN/LVN programs. Some differences in growth rates, however, may be observed among each type of basic RN education program. The growth rate was greatest among associate degree programs, registering a 6.2 percent increase. Admissions to ADN programs have now reached a new peak. This is hardly surprising in view of the continuing expansion in number of ADN programs. The 3.5 percent growth rate of diploma programs is less expected in view of the continual shrinkage of the total number of diploma programs. This finding suggests that, in general, smaller programs have ceased operations, and other programs have enlarged their admission quotas. Although the growth rate of annual admissions was smaller for baccalaureate nursing programs than for other types of basic RN education, it was the highest observed since 1976, when it rose by 4.2 percent.*

Fall admissions provide an important bellwether for evaluating annual admissions. For example, the 3.2 percent rise in admissions to basic RN programs in Fall 1980 presaged the 4.4 percent increase in admissions for the 1980-81 academic year. A similar phenomenon is evident in the growth rate of admissions to LPN/LVN programs.

The 1981 fall admissions figures show a small increase over the previous year in basic RN programs, according to Table 3. On the basis

*From *NLN Nursing Data Book 1981.* New York: The National League for Nursing, Table 22, p. 22.

Table 1. Number of Programs that prepare for Beginning Practice in Nursing, as of October 15, for the Years 1977 through 1981.

Year*	Associate Degree	Diploma	Baccalaureate	Total Basic RN Programs	Practical or Vocational
1977	656	367	349	1,372	1,339
1978	677	344	353	1,374	1,329
1979	688	333	368	1,389	1,318
1980	707	311	385	1,403	1,319
1981	726	303	393	1,422	1,331

*October 15 of each year.

Table 2. Number of Admissions and Percentage Change from Previous Year, by Programs that Prepare for State Licensure in Nursing, 1976—77 through 1980—81.

Academic Year August 1 Through July 31	Associate Degree		Diploma		Baccalaureate		Total Basic RN Programs		Practical or Vocational	
	No. Admitted	% Change	No. Admitted	% Change	No. Admitted	% Change	No. Admitted	% Change	No. Admitted	% Change
1976—77	54,289	+2.4	22,243	−5.8	36,947	+0.8	113,479	+0.1	60,975	−2.1
1977—78	53,653	−1.2	20,611	−7.3	37,664	+1.9	111,928	−1.4	61,586	+1.0
1978—79	54,131	+0.9	18,499	−10.2	36,087	−4.2	108,717	−2.9	57,953	−5.9
1979—80	54,428	+0.5	16,905	−8.6	36,035	−0.1	107,368	−1.2	57,454	−0.9
1980—81	57,788	+6.2	17,494	+3.5	36,775	+2.1	112,057	+4.4	59,696	+3.9

Table 3. Number of Fall Admissions and Percentage Change from Previous Year that Prepare for State Licensure in Nursing, Fall 1977 through Fall 1981.

Fall Admissions August 1 Through December 31	Associate Degree		Diploma		Baccalaureate		Total Basic RN Programs		Practical or Vocational	
	No. Admitted	% Change	No. Admitted	% Change	No. Admitted	% Change	No. Admitted	% Change	No. Admitted	% Change
1977	44,662	+0.7	19,663	−6.3	32,371	+1.3	96,696	−0.6	39,498	−0.2
1978	43,831	−1.9	17,210	−12.5	30,352	−6.2	91,393	−5.5	36,957	−6.4
1979	43,474	−0.8	15,681	−8.9	30,490	+0.5	89,645	−1.9	36,686	−0.7
1980	45,294	+4.2	16,077	+2.5	31,111	+2.0	92,482	+3.2	37,527	+2.3
1981	47,586	+5.1	16,773	+4.3	28,851	−7.3	93,210	+0.8	38,623	+2.9

of this evidence, a jump in admissions during 1981-82 will be expected — in the neighborhood of 1.9 percent, or 114,200 admittees. The growth in admissions to nursing education programs appears to be continuing despite shrinking pools of high school graduates. One reason for this anomaly may be the fact that women continue to enroll in colleges and universities at a higher rate than men. Nursing programs should benefit from this phenomenon since most nursing students are women. However, the process of career choice seems to have grown increasingly complex in recent years. For example, recent data from NLN's annual surveys of newly licensed nurses indicate that nursing graduates are older than those of former years. This finding reveals that fewer younger women and more older women are choosing nursing as a career. In general, younger women are more likely to choose fields hitherto dominated by men, while older women are more likely to choose careers in fields traditionally dominated by women. This trend seems to affect baccalaureate nursing programs more adversely than other types of basic nursing education, since they function in settings where opportunities for study in male-dominated, but highly rewarding, fields of study are more readily available. The reality of this predicament is evident in the 7.3 percent decline in fall admissions to baccalaureate nursing programs, resulting in the lowest number since 1973.

Other types of nursing education appear less affected by the growing competition for students. Both ADN and diploma programs registered significant increases in numbers of admissions during the 1981 fall term. Fall admissions in practical and vocational nursing programs also rose by nearly 3 percent.

Graduations from basic RN programs during 1980-81 fell by 2 percent, as expected (see Table 4). A similar but less severe decline occurred in practical and vocational nursing programs. These losses reflect the general drop in admission rates observed in recent years. Graduation losses were chiefly concentrated in diploma programs, where a drop of 11 percent was registered. In contrast, graduation gains of nearly 2 percent were recorded in associate degree programs.

Graduations from practical and vocational nursing programs continued its downward spiral, falling from 42,536 to 41,868 during 1980-81. Even these numbers do not fully reveal the severity of the decline in the PN work force. NLN's annual survey of newly licensed nurses has identified a growing number of students from basic RN programs who take the LPN/LVN licensure examination as a practice exercise preparatory to taking the RN licensure examination. Most of these individuals never function as practical or vocational nurses. Other students from RN programs take the PN licensure examination in order to acquire experience in nursing care by functioning as practical or vocational nurses while completing their RN education. These students function as practical nurses for only a brief span of time, and never become permanent prac-

Table 4. Number of Graduations and Percentage Change from Previous Year, by Programs that Prepare for State Licensure in Nursing, 1976—77 through 1980—81.

Academic Year August 1 Through July 31	Associate Degree		Diploma		Baccalaureate		Total Basic RN Programs		Practical or Vocational	
	No. Graduated	% Change	No. Graduated	% Change	No. Graduated	% Change	No. Graduated	% Change	No. Graduated	% Change
1976—77	36,815	+4.9	18,014	−9.3	23,632	+4.2	78,461	+1.1	47,297	−1.6
1977—78	37,069	+0.7	17,131	−4.9	24,497	+3.7	78,697	+0.3	45,991	−2.8
1978—79	36,763	−0.8	15,820	−7.7	25,349	+3.5	77,932	−1.0	45,066	−2.0
1979—80	36,509	−0.7	14,495	−8.4	25,411	+0.2	76,415	−1.9	42,536	−5.6
1980—81	37,183	+1.8	12,903	−11.0	24,804	−2.4	74,890	−2.0	41,868	−1.6

Table 5. Projected Graduations and Percentage Change from the Previous Year, by Programs that Prepare for RN Licensure, 1981–82 through 1985–86.

Academic Year August 1 through July 31	Associate Degree		Diploma		Baccalaureate		Total Basic RN Programs	
	Projected Graduations	% Change	Projected Graduations	% Change	Projected Graduations	% Change	Projected Graduations	% Change
1981–82	39,030	+5.0	11,660	−9.6	24,954	+0.6	75,644	+1.0
1982–83	41,392	+6.1	12,061	+3.4	25,085	+0.5	78,538	+3.8
1983–84	42,048	+1.6	12,480	+3.5	25,478	+1.6	80,006	+1.9
1984–85	41,142	−2.2	12,885	+3.2	24,582	−3.5	78,609	−1.7
1985–86	41,645	+1.2	13,005	+0.9	25,607	+4.2	80,257	+2.1

titioners of practical and vocational nursing. During 1980-81, NLN identified 4,919 students from RN programs who wrote the LPN/LVN licensure examination.

Table 5 presents projections of graduations in basic RN programs over the next five years. In general, growth rather than decline is expected to characterize the graduation rate. Diploma programs are expected to report another year of steep declines in graduations, followed by four years of growth. Substantial gains in graduations are expected to be found in ADN programs, while baccalaureate programs will exhibit modest growth.

In contrast to the steep decline in the graduation rate of generic students from baccalaureate programs during 1980-81, the graduation rate of registered nurses from baccalaureate programs jumped 14.3 percent, as may be seen in Table 6. During 1980-81, 8,416 RNs were graduated from baccalaureate programs. Of these graduates, 5,050 were from 292 baccalaureate programs that are state-approved for RN licensure (an increase of 11.6 percent over the previous year), and 3,366 RNs were graduated from 95 baccalaureate programs designed exclusively for RN students (an increase of 18.5 percent over the previous year).

Enrollments of RNs in baccalaureate programs in the 1981 fall term registered a small drop from the previous fall, declining by just under 1 percent. This was the first drop recorded since RN enrollments began to be enumerated many years ago. It remains to be seen whether RN enrollments have now peaked and will continue to plateau in the neighborhood of the low 30,000s.

Five new master's programs in nursing opened between October 16, 1980 and October 15, 1981, resulting in a total of 142 master's programs on October 15, 1981. Enrollments in master's programs rose by 7.1 percent over the previous year — from 15,053 to 16,125 — as is evident in Table 7. For the first time, the absolute number of full-time enrollments in master's programs fell. In addition, the proportion of students enrolled on a full-time basis continued its downward spiral, dropping from 48.5 percent in 1980 to 43.4 percent in 1981. Thus, nurses pursuing graduate study are doing so increasingly on a part-time basis. Graduations from master's programs during 1980-81 increased by 5.2 percent over the previous year. The growth rate of graduations is not keeping pace with the growth rate of enrollments because of the increasing popularity of part-time study whereby the completion time for the course of study is considerably prolonged. The graduation rate, nevertheless, continues to rise.

Twenty-three doctoral programs in nursing were being conducted in nursing education departments on October 15, 1981, an increase of one program over the previous year. Thirty-one universities report that

Table 6. Enrollments and Graduations of Registered Nurses in Baccalaureate Nursing Programs and Percentage Change from Previous Year, 1977 through 1981.

	RN Enrollments			RN Graduations	
Year*	Number	% Change	Year	Number	% Change
1977	23,259	+20.9	1976–77	5,445	+14.4
1978	25,563	+ 9.9	1977–78	6,146	+12.9
1979	28,033	+ 9.7	1978–79	6,480	+ 5.4
1980	33,671	+20.1	1979–80	7,365	+13.7
1981	33,357	− 0.9	1980–81	8,416	+14.3

*October 15 of each year.

Table 7. Enrollments in Nursing Programs Leading to Master's and Doctoral Degrees, with Percentage of Enrollments that are Full-Time, 1977–1981.*

	Master's Programs			Doctoral Programs		
As of Oct. 15	Total	Full-Time	% Full-Time	Total	Full-Time	% Full-Time
1977	12,143	6,112	50.3	790	294	37.2
1978	13,105	6,561	50.1	789	358	45.4
1979	14,130	6,891	48.8	980	504	51.4
1980	15,053	7,306	48.5	1,019	603	59.2
1981	16,125	7,000	43.4	1,163	625	53.7

*Pertains to doctoral programs in nursing education departments or divisions. Excludes RNs taking doctorates in other departments or disciplines.

they are considering or definitely planning operation of a doctoral nursing program in the foreseeable future.

Enrollments in doctoral programs as of October 15, 1981 were 14.5 percent higher than those of a year ago (Table 7), an improvement over the 4 percent increase observed in 1980. The absolute number of full-time enrollments continued to rise slightly but the proportion, relative to all enrollments, took a downward turn, dropping from the all-time high of 59.2 percent recorded in 1980 to 53.7 percent in 1981. Table 8 shows that despite climbing enrollments and greater numbers of full-time doctoral students, graduations dipped from 125 in 1979-80 to 121 in 1980-81. Nevertheless, the growth rate of graduations is expected to increase significantly in the immediate future.

Table 8. Graduations from Nursing Programs Leading to Master's and Doctoral Degrees, 1976–77 through 1980–81.

Academic Year August 1 through July 31	Master's Programs	Doctoral Programs
1976–77	3,830	59
1977–78	4,271	53
1978–79	4,621	101
1979–80	4,778	125
1980–81	5,026	121

Demand for Admission into Basic Nursing Programs Examined

Statistics on applications for fall admissions to basic nursing programs for the last several years are presented in Tables 9 and 10. These tables are useful as indicators of demand for entry into basic nursing education programs. Because many applicants apply to more than one program, it is recognized that the goodness of fit between the total number of applications and the level of demand is not a perfect one. Nevertheless, there is a relationship, albeit imperfect, between rates of applications and admissions. The ratio of applications to fall admissions serves as a crude indicator of pressures experienced by admissions committees in selecting applicants for entrance into a basic nursing program.

Table 9. Applications per Fall Admission, Types of Nursing Programs, 1977–1981.*

Type of Program	1977	1978	1979	1980	1981
Associate Degree					
No. applications reported	130,879	116,167	112,109	106,425	111,436
No. fall admissions reported	40,238	39,060	38,264	40,080	42,073
Applications per fall admission	3.25	2.97	2.93	2.66	2.65
Diploma					
No. applications reported	60,787	45,868	40,522	39,244	42,574
No. fall admissions reported	18,804	16,671	15,305	15,462	15,976
Applications per fall admission	3.23	2.75	2.65	2.54	2.66
Baccalaureate					
No. applications reported	83,119	69,390	80,099	67,144	62,947
No. fall admissions reported	26,200	25,726	25,931	27,190	25,005
Applications per fall admission	3.17	2.70	3.09	2.47	2.52
Total RN Programs					
No. applications reported	274,785	231,425	232,730	212,813	216,957
No. fall admissions reported	85,242	81,457	79,500	82,732	83,054
Applications per fall admission	3.22	2.84	2.93	2.57	2.61
Practical or Vocational					
No. applications reported	99,755	75,095	94,814	78,437	85,165
No. fall admissions reported	34,152	32,106	30,799	32,840	32,705
Applications per fall admission	2.92	2.34	3.08	2.39	2.60

*To be included in this tabulation, a nursing program (1) must have answered the question on number of applications and (2) must have admitted a class in the fall of the survey year.
Fall admissions figures presented in this table are not complete, since they describe only those programs that answered the question regarding applications.

The number of applications to RN admissions rose slightly from 2.57 in 1980 to 2.61 in 1981 (Table 9). Thus, the ratio is virtually unchanged from the previous year. Differences in the magnitude of the ratio among the three types of RN programs were small, ranging from 2.66 in diploma programs to 2.52 in baccalaureate programs. The absolute number of applications (the numerator of the ratio) rose by nearly 2 percent in all basic RN programs considered together. The rise was the result of greater numbers of applications to associate degree and diploma programs, which offset the decline of applications to baccalaureate programs.

Table 10 presents data on the disposition of applications received by basic nursing education programs. It is based on responses from 87 percent of the basic RN programs (N = 1,238) and 82 percent of the LPN/LVN programs (N = 1,032). The table shows that nearly two-fifths of the applicants to basic RN programs were accepted and also appeared for class, a slightly lower proportion than was observed the previous year. Indeed, the percentages of applications to all basic RN programs that were rejected, accepted, or handled in some other way were of nearly the same magnitude for two years in a row, varying by no more than one-seventh of 1 percent. Similarities between percentages for 1980 and 1981 are clearly present for each type of basic RN program. The most obvious change is the rise in student "no-shows" in baccalaureate programs.

Although the data are not presented in the table, the pattern in the disposition of applications in publicly-supported institutions differed in certain respects from those in privately-supported institutions. Specifically, the rejection rate was higher in public institutions than in private ones (33.6 percent versus 21.8 percent), and the number of student "no-shows" was greater in private schools than in public ones (17.3 percent versus 10.4 percent). These percentages are about the same as those found the previous

Table 10. Disposition of Applications for Fall Admission, by Type of Nursing Program, 1978 through 1980.

Disposition of Application	Associate Degree		Diploma		Baccalaureate		Total Basic RN Programs		Practical or Vocational	
	Number	%	Number	%	Number	%	Number	%	Number	%
1981										
Total applications	111,436	100.0	42,574	100.0	62,947	100.0	216,957	100.0	85,135	100.0
Rejected	37,499	33.7	9,454	22.2	17,038	27.1	63,991	29.5	30,242	35.5
Accepted student appeared	43,024	38.6	16,714	39.3	26,001	41.3	85,739	39.5	31,466	37.0
Accepted student did not appear	10,148	9.1	5,201	12.2	12,351	19.6	27,700	12.8	5,552	6.5
Other	20,765	18.6	11,205	26.3	7,557	12.0	39,527	18.2	17,905	21.0
1980										
Total applications	106,425	100.0	39,244	100.0	67,144	100.0	212,813	100.0	78,437	100.0
Rejected	35,899	33.7	7,841	20.0	18,125	27.0	61,865	29.1	24,857	31.7
Accepted student appeared	40,665	38.2	15,847	40.4	28,941	43.1	85,453	40.2	31,041	39.6
Accepted student did not appear	10,516	9.9	5,133	13.1	11,469	17.1	27,118	12.7	6,085	7.7
Other	19,345	18.2	10,423	26.5	8,609	12.8	38,377	18.0	16,454	21.0
1979										
Total applications	112,109	100.0	40,522	100.0	80,099	100.0	232,730	100.0	94,814	100.0
Rejected	38,452	34.3	8,193	20.2	24,110	30.1	70,755	30.4	30,173	31.8
Accepted student appeared	41,476	37.0	15,748	38.9	32,841	41.0	90,065	38.7	38,002	40.1
Accepted student did not appear	12,503	11.2	4,976	12.3	12,816	16.0	30,295	13.0	7,732	8.2
Other	19,678	17.5	11,605	28.6	10,332	12.9	41,615	17.9	18,907	19.9
1978										
Total applications	116,167	100.0	45,868	100.0	69,390	100.0	231,425	100.0	75,095	100.0
Rejected	56,604	48.7	15,996	34.9	27,229	39.2	99,829	43.1	32,811	43.7
Accepted student appeared	39,599	34.1	16,890	36.8	27,712	39.9	84,201	36.4	30,012	40.0
Accepted student did not appear	13,512	11.6	8,711	19.0	12,745	18.4	34,968	15.1	8,947	11.9
Other	6,452	5.6	4,271	9.3	1,704	2.5	12,427	5.4	3,325	4.4

year. Many, if not most, of the applicants who were accepted for admission but failed to appear on opening day were probably individuals who had applied to and had been accepted by more than one nursing program. Apparently, application to multiple programs is more frequently practiced by applicants to private institutions, or, alternatively, applicants who apply to public *and* private schools are more likely to attend the former. The proportion of applicants who were accepted and who showed up for opening day classes was quite similar in both types of institutions (38.6 percent in public institutions and 41.2 percent in private institutions — nearly the same percentages as occurred in 1980).

Applications to practical and vocational programs for the 1981 fall term were up by 8.6 percent from 1980, while fall admissions in the schools dropped by 0.4 percent, according to Table 9. The ratio of applications to 1981 fall admissions rose significantly from that observed a year earlier (2.60 versus 2.39 in 1980). Admissions committees rejected a higher proportion of applicants in 1981 and accepted a smaller proportion, according to Table 10. This may reflect lower caps, or quotas, on admission levels or, possibly, less-well-prepared applicants.

Men and Minority Students

The NLN has long encouraged nursing educators to conduct widely-based recruitment efforts so that applicants would represent the broadest possible representation of U.S. society. Furthermore, the NLN has supported the development of remedial programs, where needed, in order to enhance the probability of success in a nursing career. At its last biennial convention, the NLN membership adopted a report that, among other things, emphasized the need to encourage men and minority students to enter nursing education programs and to pursue graduate degrees in nursing. In order to estimate the extent to which various minority groups have been recruited into nursing education, and successfully completed the program, a special survey is conducted every three years.

With the exception of the 1975 survey, the triennial survey of minority groups has been "piggybacked" as an additional question in the regular annual survey of state-approved nursing schools. In 1975, this special survey was conducted independently as a separate

research project. This may help account for the large number of programs that did not respond to the question on men and minority students in 1978 and 1981, and for the high nonresponse rate to the survey itself in 1975 (see Table 11).

The response rate of 90 percent of the RN programs and 85 percent of the LPN/LVN programs is sufficiently high to permit generalizations regarding basic nursing education in the U.S. during 1980-81.

Table 12 presents the percentage of programs that reported at least one minority student among their admissions, enrollments and graduations. It is clear from an examination of these figures that far greater proportions of basic RN programs than LPN/LVN programs reported admissions, enrollments, and graduations of men and minority students. The differences were most pronounced in the male category, and were also striking in the category containing American Indians and Orientals.

The percentage of basic RN programs reporting at least one male or minority student among their admissions, enrollments, and graduations increased or remained constant between 1978 and 1981 in almost all categories. Declines in percentages were registered in only two categories: graduations of men and American Indians or Orientals. Similarly, higher percentages of practical and vocational nursing programs reported having men and minority student admissions,

Table 11. Questionnaire Return Rate, Survey of Men and Minorities in Nursing Education, by Type of Program, 1975, 1978, and 1981.

	Associate Degree			Diploma			Baccalaureate			Total Basic RN Programs			Practical or Vocational		
	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981
Total programs receiving questionnaires	621	679	726	461	367	303	330	355	393	1,412	1,401	1,422	1,294	1,296	1,253
Number programs not returning questionnaires	126	0	0	53	0	0	52	0	0	231	0	0	318	0	0
Number programs returning blank questionnaires	5	99	69	12	56	17	4	32	54	21	187	140	59	201	183
Total programs responding	490	580	657	396	311	286	274	323	339	1,160	1,214	1,282	917	1,095	1,070
Percent of total programs	78.9	85.4	90.5	85.9	84.7	94.4	83.0	91.0	86.3	82.2	86.7	90.2	70.9	84.5	85.4

Table 12. Percent of Nursing Programs Reporting One or More Students with Specified Characteristics, by Type of Program, 1975, 1978, and 1981.

	Associate Degree			Diploma			Baccalaureate			Total Basic RN Programs			Practical or Vocational		
Students	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981
Total programs responding	490	580	657	396	311	286	274	323	339	1,160	1,214	1,282	917	1,095	1,070
Men admitted	92	80	82	67	79	74	86	78	76	82	79	79	63	57	64
Men enrolled	95	85	86	85	88	87	95	85	87	91	86	87	62	54	64
Men graduated	79	76	72	66	68	68	72	74	73	73	73	71	47	44	46
Blacks admitted	69	62	66	46	54	63	76	70	67	63	62	65	64	59	61
Blacks enrolled	76	71	71	62	67	77	86	79	78	74	72	74	63	56	58
Blacks graduated	59	55	54	39	36	40	55	57	59	51	50	52	54	50	51
Hispanics admitted	38	38	40	19	29	28	42	44	45	32	37	39	34	31	33
Hispanics enrolled	43	43	44	30	35	38	58	54	60	42	44	47	32	30	32
Hispanics graduated	28	30	30	15	16	20	28	30	33	24	27	29	27	24	26
American Indians/Orientals admitted	37	36	39	15	29	21	43	42	42	31	36	36	23	26	25
American Indians/Orientals enrolled	42	39	40	26	36	34	61	57	60	41	43	44	21	23	23
American Indians/Orientals graduated	23	28	26	11	13	13	28	31	30	20	25	24	17	18	18

enrollments, and graduations in 1981 than was the case in 1978. Only the percentage of American Indian/Oriental admissions to LPN/LVN programs declined slightly between 1978 and 1981.

A comparison of percentages among the three types of basic RN programs over time reveal that the ranges of variation were very small between 1978 and 1981, averaging a difference of 13.5 percent in 1978 compared to 13.75 percent in 1981. Percentage differences among types of basic RN programs were greater in 1975 when they averaged 22.2 percent per category. The largest differences are found among basic RN programs that reported enrolling American Indians/Orientals and Hispanics as well as graduating blacks: baccalaureate programs were more likely than diploma programs to enroll American Indians/Orientals (60 percent versus 34 percent), to enroll Hispanics (60 percent versus 38 percent), or to graduate blacks (59 percent versus 40 percent). The smallest proportional differences in 1981 are found among schools that enrolled men; only 1 percent more diploma and baccalaureate schools than associate degree schools reported male enrollments.

The percentage of basic RN programs reporting men and minority representation in the 12 categories presented in Table 12 averaged 59 percent in each category among baccalaureate programs, 54 percent among associate degree programs and 47 percent among diploma programs. Net increases of percentages between 1978 and 1981 for each type of program reporting men and minority representation in each of the twelve categories of Table 12 were greatest in diploma programs and smallest in associate degree programs, averaging 1.08 percent per category in diploma programs, 0.75 percent in baccalaureate programs, and 0.58 percent in

Table 13. Number and Percent of Men and Minority Students Admitted, Enrolled, and Graduated from Nursing Programs: 1975, 1978, and 1981.

	Associate Degree			Diploma			Baccalaureate			Total Basic RN Programs			Practical or Vocational		
Students	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981
Total programs responding*	490	580	657	396	311	286	274	323	339	1,160	1,214	1,282	917	1,095	1,070
Total admissions, responding programs	38,581	46,755	53,127	21,646	19,241	16,865	29,479	35,442	32,548	89,706	101,438	102,540	46,530	53,002	51,335
Total enrollments, responding programs	67,586	80,344	92,956	53,061	44,628	39,477	85,236	94,610	86,755	205,883	219,582	219,188	45,743	48,453	48,961
Total graduations, responding programs	25,395	32,343	33,653	18,995	14,802	12,193	17,666	23,287	22,674	62,056	70,432	68,520	34,748	39,396	35,980
Men															
Admissions reported	3,159	3,154	3,727	1,121	1,027	362	1,916	2,202	1,985	6,196	6,383	6,574	2,751	2,305	2,763
Percent men admitted	8.2	6.7	7.0	5.2	5.3	5.1	6.5	6.2	6.1	6.9	6.3	6.4	5.9	4.5	5.4
Enrollments reported	4,828	4,317	5,300	2,362	1,862	1,666	4,550	4,249	4,334	11,740	10,428	11,300	1,924	1,901	2,413
Percent men enrolled	7.1	5.4	5.7	4.5	4.2	4.2	5.3	4.5	5.0	5.7	4.7	5.2	4.2	3.9	4.9
Graduations reported	2,013	2,076	1,904	856	655	491	938	1,171	1,141	3,807	3,902	3,536	1,180	1,395	1,403
Percent men graduated	7.9	6.4	5.7	4.5	4.4	4.0	5.3	5.0	5.0	6.1	5.5	5.2	3.4	3.5	3.9
Blacks															
Admissions reported	3,495	3,580	4,668	1,014	828	1,072	3,650	2,905	2,797	8,159	7,313	8,537	5,795	5,883	6,252
Percent blacks admitted	9.1	7.7	8.8	4.7	4.3	6.4	12.4	8.2	8.6	9.1	7.2	8.3	12.5	11.1	12.2
Enrollments reported	4,964	5,003	6,522	1,943	1,409	1,717	7,139	6,318	6,126	14,046	12,730	14,365	4,807	5,141	5,588
Percent blacks enrolled	7.3	6.2	7.0	3.7	3.2	4.3	8.4	6.7	7.1	6.8	5.8	6.6	10.5	10.6	11.4
Graduations reported	1,826	1,967	2,126	648	320	366	1,053	992	1,079	3,527	3,279	3,571	3,580	3,515	3,574
Percent blacks graduated	7.2	6.1	6.3	3.4	2.2	3.0	6.0	4.3	4.8	5.7	4.7	5.2	10.3	8.9	9.9

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associate degree programs. These net increases are modest indeed.

Table 13 shows the numbers and percentages of men and minority students who were admitted, enrolled, and graduated from nursing programs during 1975, 1978, and 1981. A comparison of percentage changes between 1978 and 1981 reveals that, almost without exception, all groups improved their proportional representation in total admissions, enrollments, and graduations. The only actual drop is the percent of men graduated from basic RN programs, falling from 5.5 percent in 1978 to 5.2 percent in 1981. Percentage gains between 1978 and 1981 were greatest in the categories of black admissions both to basic RN and to practical and vocational programs (+1.1 percent). Hispanic graduations from LPN/LVN schools as a proportion of total graduations rose 1.2 percent between 1978 and 1981. In basic RN programs, the percentage of total enrollees who were Hispanic rose by 1.1 percent.

None of the basic RN programs showed any significant increases in male admissions or graduations. The record on blacks was much better than that for males, particularly in diploma programs where black admissions constituted 6.4 percent of all admissions, an increase of 2.1 percent over 1978. Hispanic admissions grew at an impressive rate in baccalaureate programs, comprising 5.6 percent of their total admissions, a rise of 2.8 percent over 1978. The record on graduations of students of Hispanic background was mixed, falling between 1978 and 1981 by 1.3 percent of the total associate degree graduations and rising by 1.7 percent of the total baccalaureate graduations.

The evidence indicates that nursing educators must continue to increase their efforts to recruit and retain greater numbers of men and minority students.

Table 13 (continued). Number and Percent of Men and Minority Students Admitted, Enrolled, and Graduated from Nursing Programs: 1975, 1978, and 1981.

Students	Associate Degree			Diploma			Baccalaureate			Total Basic RN Programs			Practical or Vocational		
	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981	1975	1978	1981
Spanish Background															
Admissions reported	1,069	1,318	1,477	204	232	225	807	970	1,813	2,080	2,520	3,515	1,927	1,655	2,010
Percent Spanish admitted	2.8	2.8	2.8	0.9	1.2	1.3	2.7	2.7	5.6	2.3	2.5	3.4	4.1	3.1	3.9
Enrollments reported	1,688	1,686	2,034	402	369	422	1,747	1,299	3,339	3,837	3,354	5,795	1,545	1,543	1,740
Percent Spanish enrolled	2.5	2.1	2.2	0.8	0.8	1.1	2.0	1.4	3.8	1.9	1.5	2.6	3.4	3.2	3.6
Graduations reported	576	1,041	648	211	112	138	360	405	782	1,147	1,558	1,568	1,181	1,012	1,360
Percent Spanish graduated	2.3	3.2	1.9	1.1	0.8	1.1	2.0	1.7	3.4	1.8	2.2	2.3	3.4	2.6	3.8
American Indians/Orientals															
Admissions reported	532	617	848	97	271	119	454	491	780	1,083	1,379	1,747	591	741	731
Percent American Indians/Orientals admitted	1.4	1.3	1.6	0.4	1.4	0.7	1.5	1.4	2.4	1.2	1.4	1.7	1.3	1.4	1.4
Enrollments reported	747	923	1,244	202	413	229	1,022	1,272	1,682	1,480	2,608	3,155	531	608	642
Percent American Indians/Orientals enrolled	1.1	1.1	1.3	0.4	0.9	0.6	1.2	1.3	1.9	0.7	1.2	1.4	1.2	1.3	1.3
Graduations reported	267	442	439	69	144	67	260	301	373	596	887	879	347	415	437
Percent American Indians/Orientals graduated	1.1	1.4	1.3	0.4	1.0	0.5	1.5	1.3	1.6	1.0	1.3	1.3	1.0	1.1	1.2

*Schools who answered, in full or in part, the question on men and minority students.

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The Concept of Individualized Care

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Supply and Demand Relations and the Shortage of Nurses

WALTER L. JOHNSON and JOHN C. VAUGHN

In the past few years, there has been much discourse about the shortage of registered nurses. Originally heralded by hundreds of separate tales and anecdotes from employers of nurses, and since fueled by innumerable feature stories in the mass media, dissemination of the perception of the shortage has more recently witnessed a fusion of responses that is resulting in a more organized set of actions, for example, in the commissioning by Congress of a special study of the nurse shortage and in the establishment of the National Commission on Nursing [*1, 2*].

Notwithstanding the considerable activity generated in response to the shortage, acceptance of the existence of a serious problem and what to do about it has been far from universal and, in fact, a great deal of skepticism has been voiced. Controversy has clouded, and continues to cloud, most facets of the phenomenon—descriptions of the nature and extent of the shortage, its causes and, especially, courses of action to resolve the problem. Since this is not the first time that controversy and confusion have been manifested in matters relating to the nursing shortage, the time has come to raise a basic question. Why, in the face of the many well-meaning efforts at depicting, interpreting, and resolving the nursing shortage, does the problem keep recurring, and why does its resolution seem to be so intractable in the long run?

Since the end of World War II, shortages, or beliefs in shortages, have been frequently expressed, and

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responses and approaches have been almost innumerable, but the problem either remains or tends to recur after periods of remission.

This significant question cannot, of course, be satisfactorily answered by anyone today. There is, however, an opportunity and a need for an examination of the differing perspectives of the problem in terms of assumptions, approaches, theoretical formulations, and methodologies that are currently employed. Such an examination should help in the selection of more effective approaches and hypotheses from a number of competing ones and should help to influence more lasting solutions to the problems.

The purpose of this article is to conduct a limited analysis of two distinctly contrasting perspectives. The first one, which will be labelled "reasoning from anecdotal materials," is pervasive. This form of reasoning is continuously being heated up by the press and electronic media, so it achieves a prominence that is disproportionate to its merits. The second perspective is inspired by neoclassical economic theory, and thus, both the merits and shortcomings of this theoretical system spill over in the applications to the particular problem in nursing.

A more complete critique would examine a number of empirical studies that have been conducted from time to time, but the approach of this article is not meant to offer an exhaustive analysis of the problem. The major objective is to call attention to two of the most influential perspectives. To the extent that the implication of the perspectives influences public and private policy, a critique that focuses on their strengths and weaknesses can be justified at this time.

Reasoning from Anecdotal Materials

Awareness of a nursing shortage has largely come about by the dissemination of many anecdotes about shortage problems in individual hospitals. Anecdotes thus serve a useful function in creating a public awareness but are not valid measures of the nature and extent of the problem. While they are useful triggering mechanisms to forewarn of the emergence of a problem, they are not substitutes for statistical measures of how, when, and where the problem exists, the level of severity, or whether it is increasing or decreasing in severity or remaining relatively constant.

There is very little doubt that both present and past thinking using anecdotal approaches about nursing shortages has been dominated by considerations of what is happening to the forces that *supply* nurses to the health care system or that influence them to remain in or leave the system. By definition, a shortage (or surplus) is a function of a lack of balance between numbers of jobs or positions and the number of qualified people available to fill them. This may be expressed as:

$$NS = f(S - D) \neq 0$$

where NS = nursing shortage (or surplus), S = supply of nurses, and D = demand of employers.

The contributions of both supply and demand factors must be assessed in order to determine levels of shortage. This necessary first step is often forgotten or ignored. Instead, the investigation is short-circuited by assuming that the core of the problem lies in a breakdown of the processes of supply. This assumption is open to challenge, for shortages or surpluses must also be evaluated against processes of *demand.*

A major deterrent to this kind of balanced assessment or equal treatment stems from inadequate measures of employer demand, for the indices of supply are relatively satisfactory, as will be seen. This set of circumstances has not deterred a considerable amount of thought and speculation about the shortage as a function of supply, however, and much of it has been voiced without benefit of valid supply data that do exist.

A more serious criticism may be leveled at the use of anecdotal materials to reason about causes of the nursing shortage. There are a number of examples of leaping to conclusions about the causes and then to the policy options relating to the nursing shortage on the basis of a few self-selected stories. The examples, drawn from hospital settings, are typically studied for clues or for portrayals of events that confirm preconceived hunches or hypotheses. Since the process of construction of anecdotes can take any direction that is congenial to the thinking of the person making the constructions, it is usually possible to match concrete examples and events with explanations and exhortations to action.

We cite two examples of quite influential inferences relating to causation and policy that have largely been drawn from anecdotal materials and, subsequently, widely disseminated:

- A shortage exists because the working environment and wages of nursing are driving nurses out in droves and are deterring the entry of new members into the profession.
- The large group of nurses who have been driven out should be induced to return.

Both of these inferences are contradicted by bodies of existing data and by knowledge of how processes of supply actually function.

It is easily demonstrable that nurses are not abandoning the profession in large numbers. It may be that,

in many instances, the conditions under which nurses work are less than satisfactory by prevailing standards but, if so, such conditions are *not* resulting in substantial defections from the profession. All indices of active nurse supply for the past 10 to 15 years point to *growth*—substantial growth—and nowhere do we find any statistical evidence of significant leakage from the profession. The facts given about growth are shown in Figure 1 on page 500, and may be summarized from the data presented in Table 1 [3-7].

- The growth of the pool of employed nurses has been steady and continuous in the past decade. The average annual growth rate has exceeded 4 percent in the 10-year period. Moreover, it has exceeded an annual average of 4 percent (4.7) in the critical years 1977-80, when awareness of the nursing shortage began to receive widespread attention.
- The incremental increase of newly licensed nurses to the work force has been impressive, averaging nearly 8 percent per year and dropping only from the 8 percent average in 1972-77 to a 7.5 percent average in 1977-80, the critical years.
- The proportion of inactive nurses, or nurses not actively employed in nursing, *did not* increase during the 10-year period. Between 1972 and 1977, it remained relatively constant at about an annual average of 30 percent. However, evidence from the 1980 National Sample Survey of Registered Nurses indicates a substantial proportional and absolute *decrease* in the inactive pool to about 25 percent in the three-year period 1977-80, a trend that is *opposite* to the one hypothesized by the "flight from the profession" theory.

If there is no evidence to support the "flight from the profession" hypothesis, there is also no evidence that inactive status will become a permanent condition of life for those nurses who do change to an inactive status. Many studies of nurses in the postwar period have shown conclusively that, while there is a substantial movement out of the active labor force by some classes of nurses, their motives are usually personal or family-related and are less often related to the job being vacated. Usually, they are leaving because of childbearing and childrearing reasons or to continue with their education. Moreover, the job is vacated temporarily; the substantial movements of nurses back into the labor force consist largely of mothers with children old enough not to require the kind of attention usually demanded by younger ones. The current supply of nurses should be visualized as a dynamic, constantly changing, yet constantly growing, entity. Because it is largely a female occupation, there are losses of workers to inactive status that doubtless exceed many occupations dominated by males, but such losses are more than offset by the entry of substantial numbers of new nurses each year and by the return of experienced nurses to active status [8].

Table 1. Trend Data on the Population of Registered Nurses, 1971-1981.

Estimated Currently Licensed RNS, January, by Employment Status, 1971, 1981				Additions, Newly Licensed RNs to Employed Status	% Gross Gain	Estimated Net Gain or Loss, Jan. 1 - Dec. 31, in Percent by Employment Status				
Active (Employed)			Total	Total	Jan. 1-	Jan. 1 -	% Inactive	Active (Employed)		Total	Total
	Full-Time	Part-Time	Employed	Inactive	Dec. 31	Dec. 31	Jan. 1	Full-Time	Part-Time	Employed	Inactive
1971	534,000	216,000	750,000	(336,000)	55,000	7.3	30.9	2.7	7.4	4.0	3.8
1972	548,000	232,000	780,000	349,000	65,000	8.7	30.6	5.5	2.1	4.5	2.2
1973	578,000	237,000	815,000	357,000	73,000	9.0	30.7	5.2	5.1	5.2	2.5
1974	608,000	249,000	857,000	366,000	76,000	8.9	30.4	5.8	5.6	5.7	2.5
1975	643,000	263,000	906,000	375,000	74,000	8.2	30.1	6.1	6.1	6.1	2.1
1976	682,000	279,000	961,000	383,000	81,000	8.4	29.7	-1.0	9.7	2.1	8.6
1977	675,000	306,000	981,000	416,000	80,000	8.2	30.0	4.9	4.6	4.8	-2.2
1978	708,000	320,000	1,028,000	(407,000)	82,000	8.0	28.5	4.5	4.4	4.5	-2.2
1979	740,000	334,000	1,074,000	(398,000)	80,000	7.4	26.9	4.3	4.0	4.2	-2.3
1980	772,300	346,800	1,119,000	389,000	80,000	7.1	25.8	8.4	15.0	10.4	-2.3
(1981)	837,000	398,000	1,235,000	380,000	80,000	6.5	23.5				
										5.2 10 year average	1.3 10 year average

Footnote: The data of Table 1 consist primarily of estimates derived from various sources (3, 4, 5, 6, 7). Some of the entries are derived by extrapolation between inventories or special surveys.

Notes: Total Inactive, 1979 and 1980, estimated from linear change, 1977 and 1980 national survey.
Total Inactive, 1972, estimated by assumption of 30 percent.
1981—Estimated from data of National Sample Survey, November 1980.
Estimates of Inactive RNs—1972-1977—straight-line projections between 1972 and 1977 Inventory assuming a growth rate of 1.0382 per year—1977-1981—assumes a negative growth rate of .9784, 1977 Inventory and 1980 National Sample Survey.

Sources: Full and Part-Time Estimates—Source Book, p. 9.
Inactive Nurses, Source Book, p. 32.

The permanently inactive nurses among the entire pool of inactive nurses are older nurses. In the 1977 National Sample Survey of Registered Nurses, it was found that 36 percent of the 423,000 inactive nurses were 50 years or older, and this same proportion holds in the 1980 Sample Survey. If one subtracts from the remainder of this pool those who will eventually return, only about 30 percent would be candidates for persuasion to return to nursing. In the light of this drastically reduced potential inactive pool, one must question the value of committing substantial resources to attracting the inactive back to active nursing.

The 1977 National Sample Survey identified only 57,000 RNs who were employed in fields other than nursing, and only 67,000 in 1980. Since this means that only 4 percent of currently licensed RNs were found to have deserted this profession in 1977 for other callings and only 4 percent in 1980, the evidence is scanty indeed for holding to the common perception of a serious leakage from the profession.

Chronic Shortages and Increasing Supply

The information in Figure 1 and Table 1 highlights a contradiction inherent in the notion of chronic and persistent shortages in the face of steady and substantial increases in supply. How, it may be asked, can shortages develop with a steady increase in supply? The answer probably lies in our earlier observation that far more attention has been given to the supply side of the equation and too little to the employer's demand side. When the dynamics of demand for registered nurses are given an examination equal to that of the supply side, the contradiction begins to disappear.

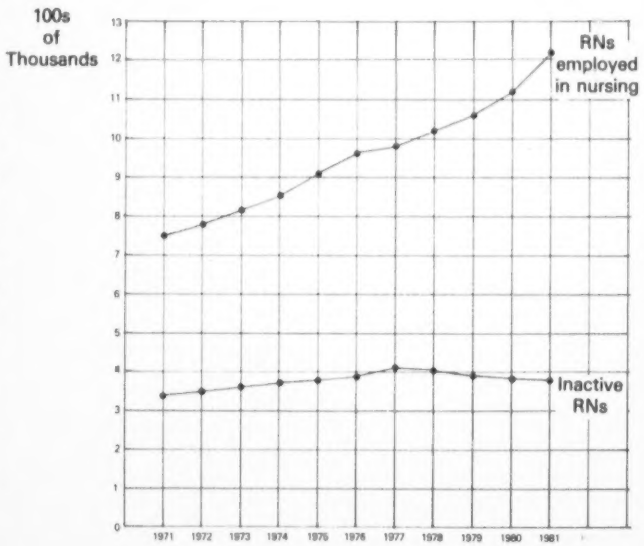
As indicated earlier, the statistical data on trends in demand for nurses are quite inadequate, and such indices as have been used (for example, vacant budgeted position for RNs) are of questionable validity. Consequently, one is hampered in efforts to assemble measures of trends in supply and demand into one common conceptual framework. However, we have discovered one statistical series that looks promising as a comparable demand indicator for the largest employers of nurses; namely, general acute-care hospitals. This indicator is the ratio of full-time equivalent RNs employed in general acute-care hospitals to the adjusted average daily census in general acute-care hospitals. It is found annually in the American Hospital Association publication *Hospital Statistics,* and it covers the decade of the 1970s, the period of interest in this article [*9*].

A careful examination of the trends of employment of RNs in general acute-care hospitals over the past decade begins to reveal some answers to the paradox of increasing shortages existing side by side with a growing supply.

In Figure 2 and Table 2, comparisons are made between components measuring the growth of all full-time equivalent RNs employed in general acute-care hospitals and the average adjusted daily patient census in general acute-care hospitals. Although the latter index manifests a modest increase over the eight-year period, it has risen at a slower rate than either the number of employed RNs or RNs employed in general acute-care hospitals. The increase in numbers of full-time equivalent hospital RNs employed per 100 average adjusted daily patient census is particularly noticeable, having risen from 50 RNs per 100 average patient census in 1972 to 72 per 100 in 1980, an average growth rate of 5.5 percent per year. In terms of absolute numbers, the growth of numbers of RNs employed by general short-term hospitals is more striking, rising from 370,000 in 1972 to 623,000 in 1980, a gain of 68 percent or an annual average gain of nearly 9 percent a year. Such sustained high growth rates over the period under review have resulted in a significant shift in the proportion of RNs employed by general acute-care hospitals within the complement of all employed RNs—rising from 56 percent in 1972 to 66 percent in 1980 (Table 2). The proportion of general hospital RNs to all employed RNs has been increasing at a rate of about 1 percent a year.

The inference that may be drawn from these statistics on supply and demand is quite simple. *The rate of increase in effective demand, especially in general short-term hospitals, for registered nurses is outpacing (and has been outpacing for several years) the rate of increase in supply.* If this divergence per-

Figure 1. Trends in Numbers of Registered Nurses Employed in Nursing and in Numbers Reporting Inactive Employment Status, 1971-1981.



sists, shortages and problems of supply are likely to become chronic, even with respectable increases in supply each year. Stated another way, *general short-term hospitals have been creating new positions* at a much higher rate than the average patient census has been increasing and at a somewhat faster rate than the rate of increase in supply.

It would seem that the events that are determining the levels of shortages of registered nurses at present are centered in institutions of health care (primarily hospitals) and not in a flight from the profession or in a breakdown in supply. Though supply is continuing to increase at a relatively steady rate, institutions that hire nurses are increasing the job openings for nurses at a still higher rate. Since this differential rate has persisted over several years, shortages are likely worsening year by year.*

Figure 2. Trends in Employment of RNs, Full-Time Equivalent, and Average Adjusted Patient Census, 1972-1980.

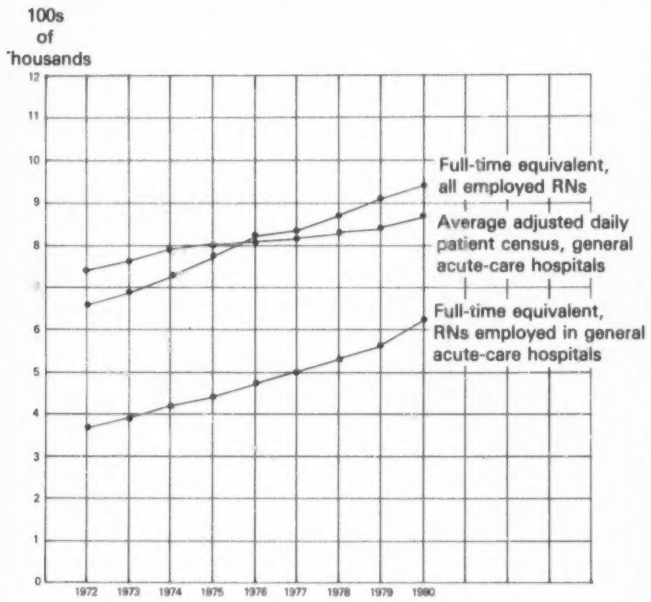


Table 2. Trends in Employment of RNs, Full-Time Equivalent Employment of RNs in General Acute-Care Hospitals, Full Time Equivalent and Average Adjusted Daily Patient Census in General Acute-Care Hospitals

	All Employed RNs FTE (1)	RNs Employed by General Acute-Care Hospitals, FTE (2)	Average Adjusted Daily Patient Census (2)	Hospital RNs Employed per 100 Average Adjusted Daily Pt. Census (2)	Percent RNs Employed in General Acute-Care Hospitals
1972	664,000	369,689	738,561	50	56
1973	696,500	389,357	767,901	51	56
1974	732,000	418,034	793,195	53	57
1975	774,000	447,481	798,263	56	58
1976	821,000	474,368	815,513	58	58
1977	828,000	504,221	820,122	61	61
1978	868,000	530,867	825,212	64	61
1979	907,500	558,996	841,330	67	62
1980	945,000	623,148	861,206	72	66

(1) *Source Book*, p. 9, Reference 4.
(2) *Hospital Statistics*, 1973-1981, Reference 9.

The Wage Rate of Registered Nurses and the Shortage of Nurses

The above findings reveal that the explanation for the recurrent shortage of nurses must focus on growing employer demand. For the past 20 years, however, a neoclassical economic theory that focuses on the supply side has been invoked in discussions exploring the causes of the shortage and has sought to shape public policy aimed at its alleviation. Like most labor market studies, its perspective is derived from its economic framework. It postulates a concept of *homo oeconomicus*, a view of human nature that attributes to the species a narrowly defined set of motives that are at once individualistic and economic. It also focuses on the economic nature of institutions that hire nurses. Having identified the cast of characters and their chief characteristics, the economic framework adopts classical wage theory, which postulates the ideal market where resources are allocated with perfect economic efficiency. This economic theoretical body assumes that complete knowledge exists among all participants in the labor market and that decisions are made in accordance with the principle of profit maximization. Among a group of occupations requiring similar levels of skill and competence, a worker will choose the one offering the greatest monetary rewards, all other things remaining equal. It is a very rational process. A worker will search for wage offers until the expected marginal return equals the marginal cost of the search. Employing institutions, on the other hand, seek to hold wages at a level that will produce the greatest profit to the institution while holding the job turnover rate at a level that does not unduly affect training costs of new employees or seriously disrupt the provision of services. If either of the latter two conditions reach intolerable levels, then wages are raised.

In the case of the potential new recruit to nursing, the individual examines the educational costs of investment in various careers. Then a comparative wage analysis is made between occupations to ascertain the

**Our intention in this article is to call attention to the high probability that employer demand for nurses has been increasing and continues to increase at a rate faster than the supply of nurses has been increasing. Discussion of the reasons for this differential is outside of the scope of the article, but it is patent that the continuous and sustained rise is not capricious or random.*

There are probably many reasons for increasing demand. Two of the most important ones probably are related to increasing proportions of patients at higher illness or acuity levels, and to the technological revolution that is taking place in the delivery of nursing and medical care in acute-care hospitals.

expected return on investment. With this wealth of information in hand, the individual is now ready to make a decision on a life career. If the relative rate of return on investment in the form of wages is less for nursing than for other occupations with similar investment costs, then the individual will reject nursing, all other conditions being equal. If, on the other hand, the relative wage rate is higher for nursing, then the individual will choose nursing.

For individuals already working in the field of nursing, the decision-making process is a little more constricted. Since the career choice and investment have already been made, the maximization of economic gain has to be achieved either through job-hopping or leaving the profession. When at work, the individual, fortified with a continuous flow of information about wages in other institutions, continually reassesses current wages with current employer in relation to wages elsewhere. When differences in wages reach a certain point, the individual will resign the current position and will accept a new position with the employer paying the highest wages. If there is little spread in wages between employers of nurses and the relative wage rate of nursing continues at a low level, then the nurse may decide to leave nursing.

The economic wage theory of the nursing shortage begins with an attempt to find a statistical covariation through time between the relative wage rate and indices of the nursing shortage, such as the vacancy rate within hospitals or a declining admissions rate to schools of nursing. When such relationships are observed, a causal linkage is deduced from the assumptions of neoclassical economic theory.

It is perhaps not surprising that the primary hypothesis emerging from these theoretical structures is one that relates shortages to a lagging relative wage rate for nursing compared to equivalent occupations, and that the primary policy recommendation that logically follows is to increase the wage scales paid to nurses until they are more in line with the wages of equivalent occupations.

Several studies of the nursing shortage have been conducted in recent years by persons employing the neoclassical framework of economics. One of the earliest was conducted by Yett in 1965, followed by Altman in 1972, Bognanno, and Jones, *et al.* [*10-13*]. Two new ones published in 1981 were conducted by Aiken, Blendon, and Rogers and by Reid and Rodgers [*14, 15*]. A typical example of the statement of the neoclassical position, which incorporates the assumptions regarding the rational choice of occupation and the theory of inhibition of wage rates by monopolistic structures, is provided by Yett:

> Economists think of a labor 'shortage' in terms of excess demand; and the presence of monopsony or oligopsony increases the possibility of a shortage in this sense. When nurse demand is increasing relative to supply, wages will not rise as much under conditions of monopsony or oligopsony as they would in more competitive labor markets. *Ceteris paribus,* the smaller the increases in RN salaries, the less will be the increase in the expected rate of return on nurse training. Thus, to the extent that shifts in the short-run supply curve depend upon the number of new recruits into nursing, the lower salaries attributable to monopsony and oligopsony will hold back long-run increases in the supply of nurses [*16*].

A Critique of the Relative Wage Theory

The elegant simplicity of a single-factor theory of the nursing shortage is appealing, especially so in the case of the relative wage theory. The solution becomes direct and simple; raise the wage scales of registered nurses and the problem will be solved in a few years!

The time has now come to make a careful examination of the assumptions, general approach, methods, and data utilized by economists in the process of developing this conclusion. An attempt will be made in the remaining pages to make such an examination, using as examples the two recent papers cited above; namely, those by Aiken, Blendon, and Rogers and by Reid and Rodgers.

Aiken, *et al.,* have made an explicit linkage between the relative wage rate and the vacancy rate in hospitals [*17*]. Between 1960 and 1979, they state that there exists an inverse relation between the trends in the relative wage rate and the trends in the vacancy rate in hospitals. They conclude that "there seems to be rather compelling evidence from the Medicare period that there is a direct relationship between the incomes of nurses and their availability for hospital employment" [*18*].

In their recent treatise concerned with the hypothesized relationship between the wages of nurses and shortages, Reid and Rodgers postulate a process of rational career choice by nurses, one that is shaped both by consideration of the costs of investment in a career and by the alternative opportunities and benefits accruing to nursing in comparison with other occupations and professions [*19*]. Erected on this postulate is an economic model of career choice, one that predicts that more students will choose nursing over other careers if nursing wages rise relative to wages of high school graduates or relative to wages of other professionals with similar schooling; conversely, "If nursing wages decline relative to the wages of high school graduates, or relative to wages of other similar professions, then fewer students will choose to enter nursing" [*20*]. A summary conclusion holds that lags between

changes in wages, which change the number of recruits, cause a cycle, or "boom or bust" phenomenon, which is the root of the recurrent shortages.

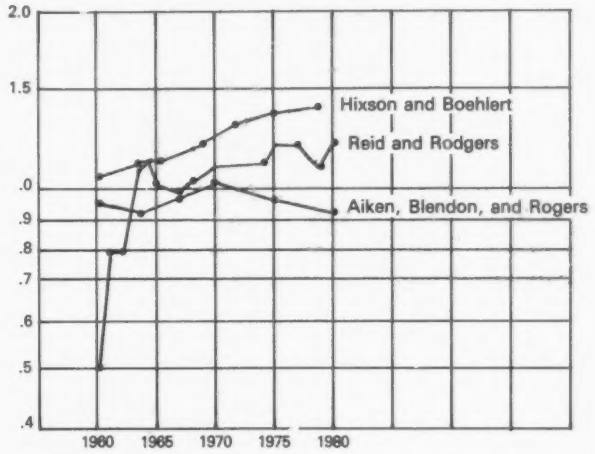
The first observation to be made about these two studies linking the relative wage rate to the nursing shortage is the inconclusive and contradictory nature of the data presented to measure changes in relative wage rates. Three distinct and conflicting pictures of changes in relative wage rates are obtained from the two studies. These differences are shown in Figure 3, where RN wages relative to female professional, technical, and kindred workers are compared for the period 1960-79.

The Aiken, *et al.,* trend line is relatively flat in slope, would show little or no average change upward or downward in the 20-year period, and the shape and slope of the trend line is strikingly different from the other two displays [*21*]. Why it differs in these respects is probably attributable to the various sources used and to the apparent use of a technique of making a straight-line projection for a 10-year period (1969-79) on the basis of only two observations (1969 and 1979) that are derived from different sources.

The two other trend lines are constructed from data and charts found in the Bureau of Health Professions study [*22, 23*]. Except for the first five years, the shape and slope of the two lines are quite similar, and the average slope for both lines is generally upward, in contrast to the Aiken, *et al.,* slope. However, there is a significant difference in the displacement of the two lines on the chart, with relative wage rates consistently differing year by year by 15 to 20 percent. The reason for this difference appears to lie in the selection of the salary base for female professional, technical, and kindred workers. In the Hixson and Boehlert calculation of relative wage rate, the average starting wages of general duty nurses were indexed against the average starting wages for female professional, technical, and kindred workers. On the other hand, in the Reid and Rodgers compilation, the average starting salaries of general duty nurses were indexed against the average salaries of *all* female professional, technical, and kindred workers, *not* the comparable salaries of *starting* female professional, technical, and kindred workers.

The conclusion of Aiken, *et. al.,* would lose much of its force if they had used the Hixson-Boehlert series for measurement of the relative wage rate [*24*]. They emphasize the inverse relationship of the past 20 years between relative wage rates and the vacancy rate in hospitals; namely that, as one declines, the other increases. When the vacancy rate is plotted against the Hixson-Boehlert relative wage rate (Figure 4), the inverse relationship is maintained for the first half, or 10 years (1960-69) of the trend, but is reversed in the last 10 years (1970-79). That is, it becomes a positive relationship in the last 10 years. In light of this

*Figure 3. Comparison of Relative Wage Rates for Registered Nurses to Female Professional, Technical, and Kindred Workers, 1960-1980, as Utilized in Two Studies.**



*Aiken *et. al.*, reference 14
Reid and Rodgers, reference 15
Hixson and Boehlert, reference 23

Data based on logarithmic scale.

observation, their evidence loses its compelling quality for acceptance of the hypothesis of the "direct relationship between the incomes of nurses and their availability for hospital employment" [*25*].

A related question is the use of the RN vacancy rate in hospitals as a valid measure of the available supply. The vacancy rate is an attribute of the RN position structure within hospitals, and it measures nothing more than the number of empty budgeted positions. With appropriate calculations, the vacancy rate would help to estimate the total number of positions that hospitals have created. However, *the vacancy rate does not measure supply, lack of supply, or physical human beings either employed or available for employment.* The vacancy rate is a function of demand and hospital structure, not of supply.

In the present situation, use of the vacancy rate is questionable on another count, since it would appear that a constant demand or position structure is implicitly assumed. However, when demand is changing as rapidly as appears in the statistics cited earlier, then *vacancy rate expressed as a proportion of all positions is a patently invalid measure of the shortage.* A growing vacancy rate may be wholly due to an expanding structure of positions rather than a shrinking supply of workers. Consider the following hypothetical case: at the end of the fiscal year, an institution has 100 budgeted positions for registered nurses, but only 90 of them are filled, yielding a vacancy rate of 10 percent. In the forthcoming fiscal year, 10 new positions are budgeted, for a total of 110 positions. The vacancy rate, through the budget process, has now become 20 per-

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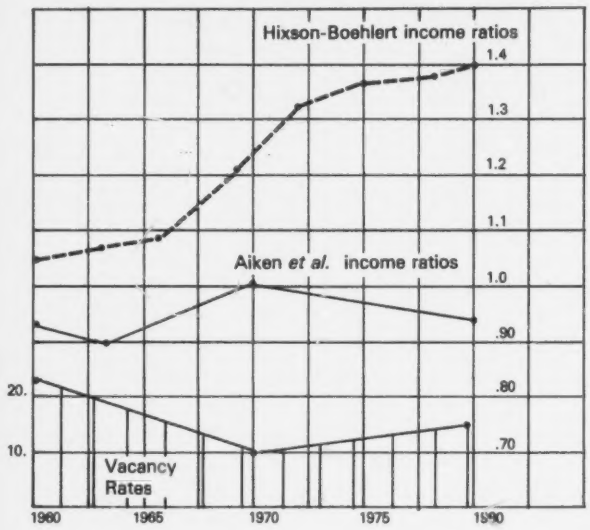
Figure 4. Comparison of Two Relative Income Ratios (RN Relative to Female Professional, Technical, and Kindred Workers) with Vacancy Rates in Hospitals, 1960-1980.



cent. Assume that, during the course of the year, 95 of the positions continue or become filled. By the end of the fiscal year, the vacancy rate would then become approximately 15 percent, a 50 percent increase in one year! Note that this happens even though the institution was able to augment its supply by 5 percent, or to increase the number of employed RNs from 90 to 95 persons.

In summary, the vacancy rate is a measure of current unmet demand, and not of available supply. If this is true, then it is inappropriate to use the vacancy rate as a measure of the supply response to changes in relative wage rates. Supply responses must be measured by utilization of indices of supply, not of demand.

An Econometric Model

In the Bureau of Health Professions publication, Reid and Rodgers, after a discussion of the economics of career choice, developed an econometric model of the nurse supply [*26*]. The model states that the number of admissions to nursing schools is a function of three factors: RN wages; wages of female professional, technical, and kindred workers; and the population of females aged 18-25. The model is expressed mathematically as:

$$ADMISS = B0 + B1\ RNWG + B2\ PTKFM + B3\ POP1825$$

where: ADMISS = total admissions to nursing programs; RNWG = monthly starting salary for registered nurses; PTKFM = average monthly salary for women in professional, technical, and kindred occupations; and POP1825 = women aged 18-25.

The authors describe the mathematical form of the model to be a logarithmic equation where the coefficients were estimated by ordinary least squares regression techniques, modified to correct for serial correlation.

The major conclusion drawn by the authors from the findings is that both the wage variables and the population variable were found to have statistically significant effects on the number of entrants to nursing programs.

Implications of this general conclusion were made explicit in three quantitative statements describing the causal relationships posited among the variables.

- Each 1.0 percent increase in the RN wage rate will eventually lead to a 1.5 percent increase in the number of entrants to nursing programs.
- A similar increase of 1.0 percent in wages of female professional, technical, and kindred workers would cause an eventual decline of about 1.4 percent in the number of entrants to nursing.
- A 1.0 percent increase in the number of women aged 18-25 produces a 1.0 percent increase in entrants to nursing programs.

The major policy implication of these relations was developed as follows:

> "If hospitals were to react quickly to a tight labor market for nurses, the shortage should end within a few years, provided wages were increased enough."

The authors are to be commended for their efforts in reducing a complex, diffuse, and sometimes intractable phenomenon such as the nursing shortage to the elegant simplicity of a linear mathematical model from which can be extracted policy statements, not only as to direction for action, but as to how much action to take, as well. On the other hand, the parent of this particular work, the econometric method, has not, especially in recent years, met early optimistic expectations, and therefore it is reasonable to raise some rather pointed questions about one offspring that purports both to handily explain the nursing shortage and to offer a conceptually simple solution.

Present-day statistical methodologies are quite effective in measuring the covariation of variables in regard to several parameters—the strength of relationships, the direction of the relationship, the chance factor in results, the combined impact of several variables on a resultant variable—and sometimes the relative influence of independent variables in numeric terms can be deduced. When all of those capabilities are syn-

thesized, it is frequently possible to predict, with relatively high degrees of accuracy, the changes in variables of interest for one reason or another (dependent variables) that will occur as the result of changes in other variables at varying rates of change (independent variables).

At the same time, there are several limitations in these statistical techniques that have been explicitly stated on numerous occasions for many decades.

Probably most of the applied statistical analysis of today treats variability of phenomena as a linear function. This is certainly true in the field of econometrics, wherein time series of many indices of economic activity are represented by sets of linear equations. The basic statistical procedure invoked is multiple regression analysis. Under specified conditions, this technique is a very powerful tool, but it does require the assumption that phenomena change in a linear fashion. The technique requires transformation of original observations to approximate linear distribution using, for example, exponential and logarithmic functions if they, in fact, deviate from the linear model.

The advantages accruing from the assumption of linearity are significant. The probability of the correct prediction of the value of one variable from knowledge of the value of one or more other variables can be greatly improved, even when the original distributions were not completely linear. But the superb capabilities of a linear methodology contain the potential for inappropriate use, as well. The presence of strong covariational relations may be confounded with causation, a relationship whose presence is beyond the ability of statistics to establish beyond dispute.

In a fundamental sense, statistical relations between variables, which are measured according to strength, direction, and degree of probability of occurence by chance, are neutral phenomena. This means, quite simply, that no inference of causality can be made when a relationship of a high degree has been found between two or more variables. When a high correlation between variables A and B is discovered, there is nothing within the statistical approach *per se* that will tell the observer whether A causes B or B causes A, whether the relations are mediated by other variables, or whether there is absolutely no causal relation whatsoever.

Theoretical reasoning must precede statistical testing. A theoretical model must stipulate whether the expected relations among variables will be covariation, causal, or null. A causal relation exists when three conditions are met. First, A and B must vary concommitantly; a change in one variable will be associated with a change in another variable. Second, A and B will covary without spuriousness; no matter how many additional factors the investigator takes into account, A and B will still covary. Third, the temporal sequence can be established; one variable must change before the other does. In addition to establishing the presence or absence of a causal relationship, the theorist should state explicitly whether there are single or multiple causes and whether the causal relations are direct, indirect, or both.

It appears to us that some critical variables have been omitted from the econometric models, especially employer demand and the differential behavior of younger and older entrants into nursing. Furthermore, the relationship between admission rates to nursing schools and demand is not a simple one because demand is affected by factors exogenous to the econometric model. Until the forces affecting demand are explicitly identified and incorporated into our theories, our models will continue to be deficient and their predictive power weak.

Essential reasoning about causation is basically a nonstatistical endeavor, one that involves theorizing and hypothesizing relations between variables, the conceptual establishment of logical connections between variables, and then testing and refining theory and hypotheses through utilization of different methods, experimental and observational as well as statistical.

When the input data for multiple regression equations consist of time series, and when the time series do not depart markedly from a linear fit, the intercorrelations among the independent variables, and between the independent and the dependent variables, are usually very high. In the Reid and Rodgers study, the intercorrelations are extremely high. Although they do not report the intercorrelations, they did indicate that tests for multicollinearity did "fail." We were curious about how serious the failure was and calculated our own series of zero-order correlations for the RN wage rate; the female professional, technical, and kindred workers wage rate; the female population aged 18-24; and the admission rate to nursing schools. The results are seen in Table 3.

The high intercorrelations among the independent variables seriously reduce our ability to perform an unbiased test of the theoretical model because it will be difficult to identify the unique direct influence of individual variables. Statistical idiosyncrasies can occur in the presence of such multicollinearity. For example, an insignificant regression coefficient can be forced into a significant negative coefficient by the high magnitude of the correlations among the other variables being partialled out of the direct relationship. In general, independent variables correlated above .85 should not be introduced into the same model.

The possibility of entering three highly intercorrelated independent variables points to the necessity for systematic development of both a logical and an empirically based theoretical structure as a foundation for statistical analysis when causal analysis is undertaken. The availability of a theory disciplines the selection of

variables for statistical analysis and provides a rationale for selection or exclusion when high correlations are discovered. When this is not done, opportunities are rife for producing erroneous findings.

Another weakness in the Reid-Rodgers analysis was insufficient appreciation of the subtrends occurring within the admission rates to schools of nursing. Although they were cognizant of an important change occurring in the age composition of the persons being admitted to nursing programs in the past 25 years, they did not adequately perceive the profound significance of the rising age of admittees in influencing admission rates, nor of the effect that the decomposition of the age variable into admission rates for older and younger admittees would have on their theory of the relative wage rate.

That the age composition of entrants into nursing programs has been increasing has been recognized intuitively for some time and was recently demonstrated conclusively [*27*]. In the early 1960s, it was estimated that only about 10 percent of entrants were in age brackets 21 years or older at the time of admission. In the late 1970s the number was around 46 percent, and it is not at all improbable that, by today (1982), those 21 years and older at time of admission constitute the majority of persons being admitted. Such a massive shift in the characteristic of age in a period of only 20 years is a remarkable phenomenon. The stereotype of the average new entrant into nursing as a recent high school graduate is no longer tenable; all of the evidence points to a loss of homogeneity in composition, and with this loss there is an implication that the incentive and attraction that influence individuals to enter nursing may be likewise changing. Whatever else may be said about it, admissions to nursing programs should not be automatically categorized as one statistical entity. Until the age differences are proven to be irrelevant, they should be examined separately in relation to explanatory variables, such as the relative wage rate.

Table 3. Zero order Correlation between RN Wage Rates; Female Professional, Technical, and Kindred Workers Wage Rate; Female Population Aged 18-24; and Admissions to Schools of Nursing.

	RN Wage Rate	PTK Wage Rate	Female Population 18-24	Admissions to Schools of Nursing
RN Wage Rate				
PTK Wage Rate	.998			
Female Population 18-24	.973	.976		
Admissions to Schools of Nursing	.975	.973	.940	

Time period covered 1960-1978. Data assembled for three-year periods.

Reid and Rodgers did use a population base of females aged 18-25 in recognition of the increasing influence of older entrants on admission rates. They stopped short of calculating separate rates for the two age groups as comprised of two independent populations, however.

We have taken the liberty of conducting such calculations for the period 1960-78. The age of admittees (ages 18-20, and 21 and older) was estimated from three studies, the Nurse Career-Pattern Study (1962, 1965, 1967), Study of Employment Opportunities of Newly Licensed Nurses (1973), and the NLN Annual Survey of Newly Licensed Nurses (1975-1980 inclusive) [*28-30*]. These estimates were then plotted on a logarithmic graph and comparisons were made with a graphic plot of the relative wage rates of RNs in relation to female professional, technical, and kindred workers, and to the total population of females aged 18-24.

These comparisons are seen in Figure 5, and they do not give much support to any covariation, not to mention causal relation, between relative wage rates and admission rates.

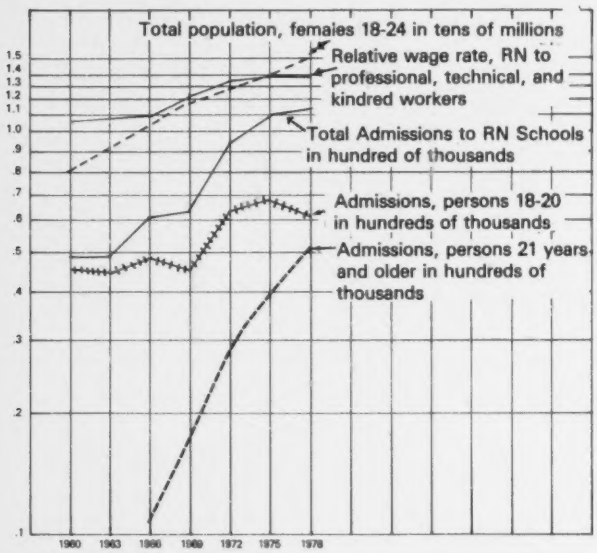
First, the assumption of a linear relationship is clearly inadmissible for the experience of younger entrants into schools of nursing for the 20-year period. In three of the six time segments, the trend in admission rates is downward, in two more there is little change, and in only one segment (1969-72) is there an upward trend. It is not likely that these irregular time patterns could be smoothed out through the use of any data transformation technique that would strongly reveal the posited negative relationship between younger entrants to nursing schools and relative wage rate.

Second, if a linear transformation were performed on the trends in younger admittees, the direction of the trend would be ambiguous and would not be consistent with the expectation predicted by the relative wage theory. In only one three-year period, 1969-72, is there a reasonable correspondence in direction of change between the two variables.

Third, the upward trend in the admission rates of the older age group decidedly contrasts, in most respects, with the younger age group. The trend line for the former is markedly upward and is sustained with very little fluctuation over nearly 20 years. It appears to be remarkably independent of the relative wage curve, showing almost no sensitivity to the segmented changes in the slope of the latter.

Our final critique of the wage theory of the nursing shortage transcends the particular criticisms of the two recent studies. On the whole, neoclassical economic theory is based on nineteenth century premises about human motivation and dissemination of market information. During its development there has been insuffi-

Figure 5. Comparison of Trends in Various Phenomena, 1960-1980. Total Female Population, 18-24; Relative Wage Rate, RNs to Female PTK Workers; Total Admissions to RN Schools; Admissions Female, 19-20 Years, and Admissions, 21 Years and Older.



Data based on logarithmic scale.

cient attention to testing hypotheses and theorems that constitute the body of the theory. Consequently, much neoclassical economic theory does not seem to meet the scientific requirement of an empirically based set of underlying theorems.

If relative wage theory is to be placed at the center of policy for relieving the nursing shortage, then more work at the micro-level of investigation should be done by economists to validate their assumptions about the behavior of individuals under differing economic conditions. Without such work, the doubts expressed here regarding hypotheses and interpretations relating wages to nurse supply dynamics tend to surface more often then not.

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The SUPPLY and DEMAND of NURSING ADMINISTRATORS

RUTH BARNEY FINE

The outlook for the supply of registered nurses is not encouraging. Since 1976, there has been no significant increase in the number of candidates seeking admission to schools of nursing. Johnson, pointing out that the number of graduates from nursing programs continues to decline, has emphasized the need to identify the reasons for this apparent disenchantment as well as strategies to develop for retaining nurses beyond graduation. He sees the retention of nurses as the most promising of all suggestions for alleviating the shortage of nurses [*1*]. The impact of the decline in admissions of nurses to schools of nursing, coupled with the very serious problem of developing strategies to encourage nurse retention, is felt throughout the nation.

In the spring of 1981, the American Hospital Association reported that member hospitals had between 90,000 and 100,000 vacant positions for nurses [*2*]. It is not unusual to find that the shortage of nurses is front-page news in local daily newspapers as well as those having national circulations. A front-page article in *The Wall Street Journal* listed a worsening of problems of retention since new career choices have opened up for women [*3*].

The declining supply of nurses, problems of retention, and other current related problems were the topics of public hearings held by the National Commission on Nursing in early 1981. Testimony was heard from a wide variety of individuals and groups, including nurses, physicians, other health care professionals, hospital administrators, nurse educators, researchers, politicians, representatives of professional associations, and consumers. Hearings were held in Atlanta, Boston, Chicago, Denver, Houston, and San Francisco. Themes that emerged from this testimony were:

- Status and image of nursing, including new roles in nursing, changes in interpersonal relationships, and public image.

- Interface of nursing education and practice, including suggestions for new models of preparing nurses for different practices and changes in relationship patterns among professionals in the delivery of care.

- Effective management of the nursing resource, including organizational structures, ideologies, policies, and procedures.

- Relationships among nursing, medical staff, and hospital administrators; inclusion of participatory democracy in health care institutions; development of peer relationships among health care professionals; and development of teams among the professionals.

- Maturation of nursing as a self-determining profession, including nursing's right to control its profession through leadership, and the unity of action by the profession.*

These emerging themes provide ample evidence of the need for nursing administrators prepared at or above the master's level, both in service and in education. The Western Interstate Commission for Higher Education (WICHE) National Panel of Experts recognized the need for the well-prepared executive or principal nurses for all types of health care facilities and established as educational criteria a ratio of 95 percent with master's degrees and 5 percent with doctor's degrees [*4*].

This discussion will relate primarily to the need for master's degree preparation in nursing administration; doctor's degree preparation for nursing administrators will not be touched upon. The basic problems of decreasing admissions to nursing schools, the flight from nursing, and the resulting crisis in health care institutions cry out for well-prepared nursing administrators to plan strategies, formulate new organizational structures and new educational models to lift nursing from its present morass toward new directions, and reform the present systems in which nurses practice.

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* National Commission on Nursing. *Initial Report and Preliminary Recommendations.* Chicago: American Hosp. Assn. Research and Educational Trust and American Hospital Supply Corporation, September, 1981, page 5.

I shall use the term nursing administrator to include those positions that primarily entail executive, administrative, or managerial responsibility for a nursing agency or system of agencies, or a recognized department or subdivision thereof, assuming that "these administrative positions customarily and regularly require the incumbent to exercise discretion and independent judgment and to direct the work of others" [5].

What evidence do we have that there is a sufficient supply of qualified nursing administrators to meet the great need in health care and educational organizations today? The situation appears bleak:

- There is a decreasing nursing pool from which to draw nursing administrators.
- The present environment in nursing is not conducive to attracting nursing administrators.
- There is a need for a massive increase in educationally prepared nursing administrators.
- Financial support for nursing students in graduate schools is declining, and there is a restriction on admissions caused by declining resources for higher education at the university level.

What Is the Educational Preparation of Practicing Nursing Administrators?

The greatest numbers of nursing administrators are employed by hospitals. In July 1977, the American Society for Nursing Service Administrators and the American Hospital Association conducted a survey of nursing service administrators in hospitals [6]. The purpose of the survey was to obtain a national profile of nursing service administrators and to provide data to analyze their role, functions, and accountability. Survey questionnaires were sent to nursing service administrators in 7,084 hospitals. In all, 5,326 surveys were returned, a response rate of 75.2 percent.

Much emphasis has been placed on providing education for administrative and supervisory personnel in nursing. This trend was caused by the expanded role of the nursing administrator, the increasing complexity of health care systems, the persistently high turnover of nurses, and the necessity for lower health care costs in the face of restricted resources. The data from the American Society of Nursing Service Administrators Survey (ASNSA) showed that little progress had been made in this area (see Table 1) [7].

Table 1. Highest Degree Earned by Nursing Administrators

Degree	Number	%
Associate	134	2.5
Diploma	2,427	45.8
Bachelor's	1,259	23.8
Master's	1,452	27.4
Doctor's	25	.5
Total	5,297	100

These data indicated that 72.1 percent of the respondents had not reached the master's degree level.

Data obtained from a larger sample of nursing administrators are contrasted with the ASNSA Survey in Table 2. It is clear from both surveys that approximately one-half of the nurses were prepared only at the diploma and associate degree levels, one-fourth at bachelor's degree level, and one-fourth at the master's degree level.

Educational Implications

If the goal for adequately prepared nursing administrators is the master's degree, the traditional pool to draw from consists of nurses with bachelor's degrees. In 1977-78, however, only 16.6 of the total number of employed nurses held a bachelor's degree [8]. In the projections for graduate nurse supply to 1985, Johnson warns that no massive shift to baccalaureate preparation will occur [9]. He estimates a 36 percent distribution of new graduates with bachelor's degrees in 1985, compared with 33 percent in 1979. Johnson states that, "by 1985, new baccalaureate graduates will be a minority group among all graduates from RN programs" [10].

Studies carried out by the Western Interstate Commission for Higher Education (WICHE) under a contract with the Division of Nursing (DHHS), projected requirements for nursing personnel [11]. Using the WICHE State Model, a panel of experts made projections concerning the composition of the population, health-care needs and health goals, and estimated health services.

Table 2

	1977-78 RN Inventory Data Educational Preparation of Nursing Administrators (Hospitals) ANA*		Survey Data American Society for Nursing Service Administrators 1977**	
Highest Level of Preparation	**(No.)**	**(%)**	**(No.)**	**(%)**
Diploma	7,402	45.3	2,427	45.6
Associate Degree	738	4.5	134	2.5
Bachelor's Degree—Nursing	3,105	19.0	1,259	23.6
Bachelor's Degree—Other	1,134	6.9	[a]	[a]
Master's Degree—Nursing	2,745	16.8	1,452	27.3
Master's Degree—Other	1,126	6.9	[a]	[a]
Doctor's Degree	96	0.6	25	.5
Total	16,346	100	5,297	100

* American Nurse's Association, Research and Policy Analysis Department, Statistics Unit, Inventory of Registered Nurses 1977-78, Prepublication data, 1981.

** "Profile of Nursing Service Administrators." 1977 Survey of Nursing Administrators. (Unpublished Document) Chicago: American Hospital Association, March 1980.

[a] The ASNSA Survey did not distinguish between bachelor's or master's degrees in nursing and other fields.

The assumptions, estimates, and criteria determined by the panel were applied to national data and to each state's specific data in order to estimate the 1982 requirements for RNs (as well as for LPNs and nurse aides) by total number and by educational preparation at both the national level and on a state-by-state basis. The Division of Nursing later projected the resources for nursing personnel for 1982.

When the lower-bound criteria (as developed by the WICHE national panel) were compared with the Division of Nursing's resource projections, the results indicated that, by 1982, the nation will have a deficit of RNs with bachelor's and higher degrees of almost 506,000 [*12*].

In addition, there are indications that there has been a steady decline of the percentage of graduations of master's degree students in the functional area of nursing administration from 10.2 percent of all students graduating in the United States in 1967-68 to 7.0 percent in 1978-79 [*13, 14*]. The number of students graduating with a master's degree in the functional area of nursing administration in 1976-77 was 219 [*15*].

Using the 1976-77 figures of 219 nurses graduating with a functional master's degree in nursing administration and the ASNSA Survey of 1977 showing that, out of 5,291 respondents, a total of 3,839 did not hold a master's degree, it would take approximately 17½ years at the 1976-77 rate of preparation to fill these positions with nurses prepared at the master's degree level. In 1978-79, the graduations of nurses with master's degrees rose to 325 [*16*]. Using the 1979-80 figures, it would take 11.8 years to fill the 3,839 positions referred to in the *Profile of Nursing Administrators* [*17*]. These comparisons do not take into consideration the need for prepared nursing administrators in the 1,800 AHA hospitals not responding to the survey, the need for prepared nursing administrators in non-AHA hospitals, public health agencies, nursing homes, home health agencies, the military, Veterans Administration Hospitals, and other agencies where nurses carry out administrative functions; nor is the need for additional administrative nurses considered as health care needs of an aging population increase and as attrition occurs in the present population of prepared nursing administrators.

The enormous need for prepared nursing administrators was recognized by the WICHE Panel of Experts, recommending as the *first* priority that "the number of nurses academically prepared for nursing administrative positions in the health care delivery system be increased quickly and substantially" [*18*].

Implications for Supply of and Demand for Qualified Nursing Administrators

In normative organizations, the usual method for bringing about change is through the education of those in positions of authority. When one examines the tremendous need for adequate educational preparation for nurse administrators, is there any wonder that nursing is in a crisis and that nurses are leaving nursing in large numbers? The nursing literature has been replete with criticisms of nursing administrators. Most of these administrators were probably performing at peak capacity, given their educational preparation and existing constraints. The tendency to blame the victim is nonproductive. Rather than focusing on an exceptionalist's point of view (blaming the victim), a universalistic viewpoint is needed. Nursing administrators have been forced by circumstances and inadequate preparation of the core group to relate to problems in a particular way. What is needed is a universalist viewpoint that is reflected in strategies that are public, legislative, general, national, and inclusive.

Most of the present-day nursing administrators are forced into the particularistic mode of thinking by the constant emergencies that arise in nursing services. The ultimate effect is to distract attention from the real causes and leave unaddressed such basic causes as inadequate organizational structures, poor use of human resources, and inadequate financial rewards for nurses.

With inadequately prepared nurse administrators, many problems inherent in the themes that emerged from the public hearings on nursing could be addressed, and solutions could be found [*19*]. New organizational structures could be developed that would allow participatory decision making by staff nurses. Well-prepared nurse administrators would have the knowledge and skills to change the work environment, organizational climate, and task allocations of the nursing staff and to effect changes that would increase job satisfaction, lessen frustrations, and generally improve the quality of the staff nurse's working life.

Seven thousand well-prepared nursing administrators in 7,000 hospitals would have a massive impact on the orientation of medical students, residents, student hospital administrators, and student nurses. This impact would be transmitted to all health care agencies, for it is in hospitals that most health care professionals receive their first impressions of nursing, and it is there that 65 percent of all registered nurses are employed.

The political impact of nursing administrators prepared at the master's degree level on all health care agencies, including public health, nursing homes, and hospitals, would be great. Administratively well-prepared nurses with high self-esteem and well-developed intellectual skills could plan in such a way that ends and means would be linked in a creative way. Since nurses are the majority among health care professionals, a doctrine of positive liberty for nurses could come from the qualified nursing administrators who could combine intellectual leadership with their natural action orientation. To paraphrase Hartz, American nurses as a majority have been an amiable sheepdog kept forever on a lion's leash [*20*].

The catalyst for unleashing the potential of staff nurses would come from the intellectual leadership of

nursing administrators, who would be willing to fight for the rights of the majority on the premise that every injury to the well-being of the individual staff nurse is a public injury to society.

If there were enough qualified nursing administrators, they would become a powerful political influence and, because of their collective strength, they could provide strong individual leadership in every organization. Attention and resources could be focused on the staff nurse group, and the administrator could become a nurse advocate as well as a patient/client advocate. Nurse administrators could expand their power by granting more power to staff nurses, giving them effective opportunities to participate in decision making. Increased participation by staff nurses in organizational affairs should result in increased efficiency and effectiveness of the nursing organization, with an increase in the total power for nursing and the nursing administrator.

Impact on Schools of Nursing

The need for qualified nursing administrators has been approached from the standpoint that nursing administrators with master's degrees *should* be available. According to the National Panel of Experts, all hospitals *should* have a director of nursing; large teaching hospitals should have two to three associate directors; nursing care homes, personal care homes with nursing, and community health nursing should have one director per agency. All of the directors should be prepared at the master's degree (95 percent) or doctor's degree (5 percent) level. Furthermore, the Panel of Experts expect that most states would be able to meet these lower-bound criteria by 1982 [*21*].

What effect would such a demand place upon schools of nursing? Are qualified faculty available to teach in programs offering a functional master's degree in nursing administration? Is it realistic to project these assumptions and predict that all the above health care agencies would meet the criteria established by the National Panel of Experts? The number of nurses in administrative positions by fields of employment and educational preparation as of 1977–78 is shown in Table 3 [*22*]. This year, 29,165 nurses (76.9 percent) were prepared at a level below the master's degree. In order to meet the WICHE criteria for administrators prepared at or above that level for hospitals, public health agencies, and nursing homes, 28,847 nurses would have needed to have been admitted to graduate schools of nursing in the fall of 1981. This would mean an expansion of 90 times the present admissions to master's degree programs in nursing administration.

The National Panel of Experts has established the lower-bound ratio of faculty to students in master's degree programs as one registered nurse to six students. The educational criteria for faculty teaching master's degree programs was established as 75 percent doctor's degrees and 25 percent master's degrees [*23*].

If 28,847 additional nurses were admitted in Fall 1981 to programs offering a master's degree in nursing administration, these programs would require an increase in faculty of 4,808 FTEs, using the ratio of six students to one faculty member. Of the 4,808 FTE additional faculty, 3,606 would be required to hold a doctor's degree.

In contrast, of the full-time nurse faculty teaching in bachelor's and higher degree programs in 1980, 1,278 (13.4 percent) held doctor's degrees; in the same programs, 7,763 (81.4 percent) held master's degrees [*24*].

Information was not available on the number and preparation of faculty teaching only in master's degree programs in nursing, but from the data available, it is evident that the standard ratio of 75 percent with doctor's degrees to 25 percent with master's degrees for master's degree programs is not currently being met.

An additional problem in considering the potential of schools of nursing to respond to an increased demand for qualified nursing administrators is the number of vacant nurse faculty budgeted positions. For every 100 full-time budgeted positions for faculty in schools of nursing, there were 3.5 budgeted vacant positions in 1980 [*25*]. In bachelor's and higher degree programs with content area in nursing administration, there were 21 budgeted vacant positions as of January 1980 or 5.2 percent of the total vacancies of the bachelor's and higher degree programs [*26*].

What about the supply of doctorally prepared nurses? Doctor's degree programs for registered nurses are of two types: those that offer majors in nursing and those that offer majors in such related fields as education, public health, or sociology. During 1980, 13 institutions offered a major in nursing only, nine offered a major in nursing or in related fields, and three offered a major in related fields only [*27*].

In 1979–80, 125 nurses graduated from doctor's degree programs located in nursing education departments in the United States, an increase of 23.8 percent over the previous year [*28*]. Forty graduated from doctor's degree programs located in departments other than nursing, a 14.7 percent increase over 1978–79 [*29*]. The total number graduating in 1979–80 was 165. If the schools of nursing attempted to staff the master's degree program to meet the demand for qualified nurse administrators, an additional 3,441 graduates from doctor's degree programs would be needed. At the rate of 165 per year, it would take 20.9 years to meet this need.

The Need for Nurses in Research

The WICHE National Panel of Experts recognized the need for research in nursing, especially in the clinical area of nursing, and established a lower-bound criterion of 0.1 registered nurses for research to 10 direct-care registered nurses. The criteria of 50 percent doctor's degree and 50 percent master's degree were established [*30*]. These criteria related to clinical research. No criteria were established for research in nursing ad-

ministration. I could find no data on the numbers of nurses engaged in nursing research in hospitals and other service agencies. Much of the research being done is undertaken by nurses who are occupying faculty positions. A few university hospitals have nurse researchers on a full-time basis.

A critical need is evident for research in nursing administration. According to Stevens, "As yet, there is little research which captures the unique problems and processes of nursing administration" [*31*]. Techniques of other fields, primarily business, are applied to nursing organizations without research being conducted to determine whether such an interchange is appropriate.

The Quality of Programs Preparing Nurse Administrators

I could find no data on the background of nurse faculty teaching in master's degree programs preparing nurse administrators. However, one might speculate that a filled position may be occupied by faculty without experience in administration; that faculty may be qualified by education but not by experience; that they may be qualified by experience but lack a doctorate; that they may have a doctorate in a field other than nursing, perhaps a field unrelated to nursing administration; and, finally, that they may be qualified both by education and by experience. There is an urgent need to establish qualifications for teaching nursing administration in order to combat the often-heard statement that "anyone can teach administration."

In considering the qualifications of faculty to teach in master's degree programs preparing nursing administrators, attention should be paid to the lack of nursing administration content in undergraduate education. Faculty in graduate programs in nursing administration are faced with students who have little or no undergraduate education in their graduate major. The major building block, then, becomes the student's experience. This means that faculty members in such programs must be able to adapt already existing materials from the discipline of administration and from the discipline of nursing to their needs. The faculty member must be knowledgeable and experienced in both fields. Stevens calls for the development of a discipline of nursing administration [*32*]. Clearly, if a discipline of nursing administration is to be developed, an adequate supply of nurse administrators prepared at the master's degree level must be available for practice, for teaching, and for a pool of candidates for doctor's degree programs.

Development of a Transitional State

The need for nursing administrators prepared at the master's degree level far exceeds the present supply and the forecasted supply from the present educational system. It is evident that, in this situation, we cannot get from what is to what is needed without establishing a transitional state that would act as a bridge from here to there.

One of the problems with using the criteria established by the WICHE Panel of Experts is that no concentrated national effort has been made to develop change strategies to bring about the actualization of the criteria as it pertains to preparing nursing administrators.

The nursing profession must develop strategies for coping with the problems associated with the change. Bechardt lists four issues to be considered in designing such strategies:

1. Determining the degree of *choice* about whether to change;
2. Determining *what* needs changing;
3. Determining *where* to intervene; and
4. Choosing *intervention technologies* [*33*].

A national commission on nursing administration should be established to develop strategies of change. Nursing administrators, both education and service, should be considered a national resource, and the development of this resource should be the goal of the commission.

The internal pressures of the shortage of nurses and the growing anxiety on the part of the public about the supply of nurses (as evidenced by the media's attention to this problem) leaves the nursing profession little choice but to cope with the demand to reverse the trend of attrition from nursing. It is quite possible that a major change in a positive direction could be accomplished by a large core of educationally well-prepared nursing administrators. The commission would need to examine the forces pushing for the change and the forces, such as scarce resources, scarcity of qualifed faculty, and so forth, working against the change.

The commission would need to ask: What needs changing? How could the educational systems be readied for change? What attitudes and behaviors would need change? What structures, both service and education, would need change? What temporary systems, such as continuing education or other approaches, would be needed to institute the change? If new approaches to undergraduate education are needed, how will this be accomplished on a national basis? Perhaps an immediate resource could be the RN who is returning for a bachelor's degree. If this group could challenge and pass the clinical content of the BS program, the undergraduate time could be used to teach administration concepts, thus forming a base for graduate education in nursing administration.

The commission would need to determine where to intervene. Since hospital systems are "hurting" systems, they may be ready for change. This is already evidenced in some hospitals, where alliances have been made with educational institutions to enroll staff nurses in BS programs. The same idea could be used to prepare nursing staff for top-level nursing administration positions. All levels of the systems in health care and

nursing education could be examined for ideas of alternative places to start the change process.

The commission would also need to examine the intervention technologies. What techniques could be used to move the process forward? Perhaps massive changes for the entire nursing educational system or pilot projects linked to larger educational systems. National confrontation meetings could be arranged using the same format used in the public hearings by the National Commission on Nursing.

The major point in establishing a transitional state to accomplish change is that it is very difficult for the system to pull itself up from within. Creation of an external force is needed to accomplish the change. Given that change is needed, it is now the task of a concerned nation to mobilize resources and plan strategies to bring about the education of the essential administrators in nursing so that further changes in the health care system can be accomplished.

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Yearly Review of Salaries in Home Health Services — 1982

The yearly review of salaries in home health and community health agencies for 1982 shows a steady increase in salaries for all positions in all types of agencies.

Returns were received from 654 agencies, somewhat over 52 percent of the sample to which questionnaires were sent. The responding group comprised 216 official local and county agencies, 226 nonofficial, 18 combination agencies, 151 boards of education and 43 state health departments. Salaries are reported for full-time personnel, which included 18,520 registered nurses, of whom 14,733 were staff nurses.

Official agencies have traditionally reported higher salaries than nonofficial ones. However, in this year's survey the difference between median salaries for nurse executive directors in the two types of agencies was relatively small. Nurse executive directors in official agencies had a median salary of $30,600 while those in nonofficial agencies earned $29,550 (Table 1). In both types of agencies the middle 50 percent for the nurse executive director covers a range of about $9,000, which is greater than the middle range for any other position. A wider variability in salary for the top nurse position could therefore be expected as compared to the variability found in salaries for other positions.

Median salaries for supervising nurses were highest among boards of education, $25,620, and lowest in nonofficial agencies, $21,083, a difference of over 21 percent. The difference between supervisor's salaries in official ($23,977) and nonofficial agencies was less, about 14 percent.

Table 1. Median Annual Salaries and Middle 50 Percent for Registered Nurses by Type of Agency and Position—1982

Type of Agency and Position	Median	Middle 50 Percent
Local Official Health Agency		
Nurse executive director	$30,600	$26,400-35,600
Supervising nurse	23,977	20,482-26,683
Staff nurse	19,148	16,634-22,028
PHN fully qualified	19,840	17,349-22,097
Other registered nurse	17,398	15,276-20,704
	N = 216	
Nonofficial Agency		
Nurse executive director	29,550	25,000-34,650
Supervising nurse	21,083	19,044-23,533
Staff nurse	17,480	15,973-19,567
PHN fully qualified	18,345	16,508-20,213
Other registered nurse	17,031	15,582-18,539
	N = 226	
Board of Education		
Supervising nurse	25,620	20,775-29,625
Staff nurse	19,080	15,654-22,069
	N = 151	

N = Number of agencies responding.

The yearly review of home health and community health agencies has been an annual service of NLN for the past 29 years, from 1953 to the present.

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Health Agencies and Community

Salaries of staff nurses in boards of education and official agencies were similar, medians being $19,080 and $19,148, respectively. Staff nurses in nonofficial agencies had a median salary of $17,480, about 10 percent less than their counterparts in official agencies. The middle 50 percent of staff nurses' salaries in official agencies covered a range of $5,394, and in nonofficial agencies $3,594, but in boards of education the range was greater—$6,415.

Among staff nurses, salaries are obtained for fully qualified public health nurses—those who have completed an NLN-accredited collegiate or university program in nursing, including preparation in public health nursing—and other registered nurses without specialty education. About 56 percent of the staff nurses in this survey were classified as fully qualified, but proportions differed by type of agency. Official agencies had 65 percent and nonofficial about 50 percent fully qualified public health staff nurses. Salaries paid to fully qualified public health staff nurses in both types of agencies are higher, $19,840 (official) and $18,345 (nonofficial), than those of other registered nurses—$17,398 and $17,031. The median salary of fully qualified staff nurses in official and nonofficial agencies showed a differential of about 8 percent, but the difference in salaries of other registered nurses only amounted to 2 percent.

Salary and Position

Nurse executive directors in official agencies earned about 28 percent more than supervisors; in 1981 the differential had been greater, 35 percent. In nonofficial agencies the difference between nurse executive salaries and supervisors' earnings was 40 percent, a slight increase over last year's 38 percent difference. However, differences between supervisors' and staff nurse earnings and between fully qualified public health nurses and other staff nurses in both types of agencies were quite similar in both the 1981 and 1982 surveys. In official agencies supervisors' earnings were about 25 percent more than staff nurses, and fully qualified nurses had median salaries about 14 percent higher than staff nurses.

In nonofficial agencies the observed difference between supervisors' and staff nurses' salaries was slightly over 20 percent, while the difference between fully qualified public health nurses and other nurses amounted to 7 percent.

Trends in Salaries

Table 2 presents median salaries and rate of increase from 1977 to 1982. The uneven pace of salary increases is evident, with rather modest increases, especially in supervisors' and staff nurses' salaries, in the late 1970s changing to higher rates of growth during the past two years. The highest proportional increases noted in 1982 occurred in salaries of supervisors and staff nurses in official agencies, almost 14 percent. The past two years have shown substantial rates of salary increase for nurse executives in nonofficial agencies, being almost 17 percent in 1981 and 12.3 percent in this year's

Table 2. Median Annual Salaries of Registered Nurses by Type of Agency and Position—1977-1982

Type of Agency and Position	Median Annual Salary						Annual Percent Increase					Percent Increase
	1977	1978	1979	1980	1981	1982	77-78	78-79	79-80	80-81	81-82	1977-1982
Local Official Health Agency												
Nurse executive director	$19,675	$21,450	$23,200	$26,100	$28,450	$30,600	9.0	8.2	12.5	9.0	7.6	55.5
Supervising nurse	16,531	17,156	18,091	18,788	21,043	23,977	3.8	5.4	3.9	12.0	13.9	45.0
Staff nurse	13,104	13,584	14,342	14,913	16,822	19,148	3.7	5.6	4.0	12.8	13.8	46.1
Nonofficial Agency												
Nurse executive director	18,060	18,950	20,658	22,563	26,325	29,550	4.9	9.0	9.2	16.7	12.3	63.6
Supervising nurse	14,588	14,918	16,222	17,103	19,041	21,083	2.2	8.7	5.4	11.3	10.7	44.5
Staff nurse	11,645	12,071	13,287	14,314	15,861	17,480	3.7	10.1	7.7	10.8	10.2	50.1
Board of Education												
Supervising nurse	18,375	18,350	20,150	21,150	23,300	25,620	−0.1	9.8	5.0	10.1	10.0	39.4
Staff nurse	13,998	14,789	15,436	16,482	17,088	19,080	5.7	4.4	6.8	3.7	11.7	36.3

survey. All other salaries increased 10 percent or more except those of the nurse executive director in official agencies, where the increase amounted to 7.6 percent.

Since 1977 nurse executive directors' salaries have increased the most, almost 64 percent in nonofficial agencies and over 55 percent in official agencies. Although staff nurse salaries in nonofficial agencies are still lower than in official agencies, since 1977 their salaries have increased by more than 50 percent while in official agencies staff nurse increases for the same time period have been 46 percent. Supervisors' salaries in both official and nonofficial agencies show a comparable rate of increase since 1977, being approximately 45 percent.

In boards of education, supervisors' salaries for the time period displayed increased by somewhat over 39 percent and those of staff nurses by 36 percent.

Community Size and Location

The size of an agency and its geographic location have a relationship to salaries. The larger the population served and, by implication, the larger the agency, the higher the median salaries for all levels of nursing positions.

In official agencies serving populations of 500,000 and over, the median salary for the nurse executive director was $35,800, for supervisors $25,093, and for staff nurses $21,068. For official agencies in areas of less than 50,000 (of which there were very few in the sample), nurses holding the same positions earned $23,050, $18,000, and $16,335 (Table 3).

Population differences among nonofficial agencies and boards of education resulted in median salaries displaying the same pattern as found in official agencies, with the most dramatic differences occurring in reported salaries for nurse executive directors in nonofficial agencies. Here the nurse director in agencies serving populations of 500,000 or over earned over 60 percent more than did the director in the smallest communities. Proportional differences between largest and smallest population groups for supervisors in nonofficial agencies and staff in both nonofficial agencies and boards of education amounted to approximately 30 percent.

Median salaries for fully qualified public health staff nurses and other staff nurses differed by geographic location of agency as well as by type of agency. In all agencies, salaries of staff nurses were highest in the Far West, ranging from $19,678 for staff nurses in nonofficial agencies to $22,161 for fully qualified public health nurses in official agencies (Table 4). Lowest salaries for fully qualified staff were found in the South for official agencies ($17,065) and in the Northeast for nonofficial agencies ($17,020). For other staff nurses, the lowest salaries also were reported among official agencies in the Northeast ($16,399) and in nonofficial agencies in the South ($16,163). In boards of education, the lowest salaries were also in the southern region ($18,299), followed by the Midwest ($18,676), with salaries in the Northeast and West showing only a slight difference. Some notations on responses from boards of education indicated that nurses were on the same pay scale as teachers in the school system.

Table 3. Median Annual Salaries for Registered Nurses by Type of Agency, Position and Population of Area Served—1982

Type of Agency and Population	Nurse Executive Director	Supervising Nurse	Staff Nurse
Local Official Health Agency			
All population groups	$30,600	$23,977	$19,148
Under 50,000	23,050	18,000	16,335
50,000-249,999	27,100	21,299	17,315
250,000-499,999	31,100	21,600	18,077
500,000 and over	35,800	25,093	21,068
Nonofficial Agency			
All population groups	29,550	21,083	17,480
Under 50,000	22,500	17,600	14,675
50,000-249,999	28,375	20,307	16,584
250,000-499,999	34,800	21,479	17,198
500,000-and over	36,700	23,943	19,367
Board of Education			
All population groups	[a]	25,620	19,080
Under 50,000	—	20,400	16,250
50,000-249,999	—	23,800	17,350
250,000-499,999	—	27,450	18,599
500,000-and over	—	29,350	20,714

[a] Title not used in boards of education.

Table 4. Median Annual Salaries of Staff Nurses by Type of Agency and HHS Region[a]—1982

Region	Local Official		Nonofficial		
	Public Health Nurse	Other RN	Public Health Nurse	Other RN	Board of Education[b]
All Regions	19,940	$17,398	$18,345	$17,031	$19,080
I, II, III Northeast	18,178	16,399	17,020	16,657	20,617
IV, VI South	17,065	16,500	17,750	16,163	18,299
V, VII Midwest	20,075	19,415	20,200	17,247	18,676
VIII, IX, X Far West	22,161	20,513	20,517	19,678	20,764
N	3263	1731	1694	1726	2460

N = Number of staff nurses.

[a] I: Conn., Me., Mass., N.H., R.I., Vt.
II: N.Y., N.J.
III: Del., D.C., Md., Pa., Va., W. Va.
IV: Ala., Fla., Ga., Ky., Miss., N. Car., S. Car., Tenn.
V: ILL., Ind., Mich., Minn., Ohio, Wisc.
VI: Ark., La., N. Mex., Okla., Tex.
VII: Iowa, Kans., Mo., Neb.
VIII: Colo., Mont., N. Dak., S. Dak., Utah, Wyo.
IX: Ariz., Calif., Hawaii, Nev.
X: Alaska, Idaho, Ore., Wash.

[b] Distinction between fully qualified and other RN's not made in Boards of Education data.

Other Personnel

Table 5 summarizes data on agency employees with job titles other than nurse executive director, supervisor, or staff nurse. This table, as the preceeding, includes only full-time employees, and gives number of agencies reporting the job title, number of employees within each category, median salary, and rate of increase since last year. The data understate the actual use of the employees named in the table, since many agencies now use these personnel on a part-time or contractual basis. Boards of education are excluded from the table because health personnel other than nurses are seldom employed on a full-time basis.

All median salaries in Table 5 were higher than those in the 1981 survey, although proportional salary increases differed by position. The directors of professional services in agencies where the chief executive was not a nurse earned a median salary of $27,000 in 1982, almost 14 percent more than last year, but still considerably less than the median salary of $40,800 for nonnurse executive directors. It should be noted, however, that these data cover a relatively small number of agencies. The positions of assistant director of nursing services and nurse educational director are usually found in large agencies, and nurses in these positions had median salaries of $26,775 and $22,036. Other nurse administrators held various titles, such as coordinators of special programs, and so forth, and the median salary, as well as the median salary for nurse consultants, was slightly more than $23,000. The salaries of assistant supervisors increased only slightly since the last survey and amounted to $20,450. The use of nurse practitioners has apparently increased during the past year. In 1981, 88 agencies reported employing 334 nurse practitioners, but this year 87 agencies had 421 as full-time personnel. Their median salary was $20,974.

Table 5. Other Full-Time Health Agency Personnel—Number of Agencies, Number of Employees and Median Annual Salary—1982[a]

Position	No. of Agencies with Specified Position	No. Full Time	Median Annual Salary	1981-1982 Percent Increase
Registered Nurse				
Director of professional services[b]	58	54[c]	$27,000	13.6
Assistant director	172	267	26,775	7.3
Educational director	50	76	22,036	5.3
Other administrator	157	442	23,367	12.4
Consultant	58	522	23,179	8.4
Assistant supervisor	143	523	20,450	1.6
Nurse practitioner	87	421	20,974	10.7
Nonnurse Health Professional				
Physical therapist	154	440	19,640	5.3
Speech therapist	45	71	20,083	4.9
Occupational therapist	52	123	19,875	12.1
Social worker	108	218	19,100	9.0
Nutritionist/dietitian	69	119	18,975	14.7
Other health	90	491	18,663	4.0
Licensed Practical Nurse	193	1,381	12,494	1.4
Auxilliary Health Personnel				
Public health assistant	52	465	11,613	6.5
Home health aide	289	4,116	9,865	9.3
Nonnurse Executive Director	58	58	40,800	7.8
Controller/Business Manager	121	121	22,550	11.9
Business Support Staff				
Secretary	317	1,088	11,838	13.6
Clerk	335	2,652	11,429	10.7

[a] Includes nonofficial agencies, official state and local agencies, and combination services.

[b] In agencies where executive director is a non-nurse.

[c] Agencies list position but title was vacant at time of response.

More agencies reported employing physical therapists and social workers on a full-time basis than any other type of health personnel. Their salaries were $19,640 and $19,100 respectively. The highest paid among therapists were speech therapists, earning a median salary of $20,083.

More than a thousand licensed practical nurses were employed by 193 agencies in the study; their median salary was $12,494.

Although salaries for public health assistants and home health aides increased since last year, these workers earning $11,613 and $9,865, are the lowest paid of health personnel.

Salaries of business staff increased more than 10 percent for each group reported in the table, with controller (or business manager) earning a median salary of $22,550, secretarial staff $11,838, and clerical staff $11,429.